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CONTRACT GOVERNANCE IN SMALL-WORLD NETWORKS: THE CASE OF THE MAGHRIBI TRADERS

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ABSTRACT—This Article revisits the best known example of successful private ordering in the economics literature: the Maghribi Jewish merchants who engaged in both local and long-distance trade across the Islamic Mediterranean in the eleventh century. Drawing on a case study of over 200 Maghribi merchant letters, it develops a network governance-based account of the way that private ordering might have supported exchange among the Maghribi traders with little or no reliance on the public legal system. The analysis reveals that a particular type of bridge-and-cluster configuration of ties among traders and trading centers—known as a “small-world network”—can have strong reputation-based contract enforcement properties that make it possible support trade over long distances, even in environments of noisy information. This structure economizes on information costs by aggregating information in local nodes and then connecting these nodes with ties that are robust enough to transmit the relevant information but sparse enough to do so at a cost far below the cost of keeping all transactors in the market aware of all reputation-relevant information all of the time. Identifying the governance power of small-world networks reveals that the small, geographically concentrated, close-knit groups (known as cliques) that the legal literature has long associated with successful private ordering are not in fact a precondition for well-functioning private order—small-world networks can effectively support trade among large numbers of traders operating at considerable distances from one another. In addition, because the small world network form can be found in many industries today, recognizing its potential contract governance properties should make it possible to better understand the ways trade both is and can be supported in a variety of modern markets.

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INTRODUCTION

Avner Greif's study of the contract enforcement institution used by the Maghribi Jewish merchants in the Muslim world in the late Middle Ages is a seminal work in the literature on private ordering.¹ Drawing on merchant letters and other documents from the Cairo Geniza, he describes a private order institution,² the traders' coalition,³ that might have enabled the Maghribi to trade with one another over long distances across the Islamic Mediterranean⁴ by employing fellow Maghribi as agents, whom they could trust not to cheat.⁵ The traders' coalition was "a nonanonymous

¹ Greif's three seminal papers on the Maghribi traders have been widely cited. See Avner Greif, *Contract Enforceability and Economic Institutions in Early Trade: The Maghribi Traders' Coalition*, 83 AM. ECON. REV. 525 (1993) [hereinafter Greif, *Early Trade*] (Google Scholar citations, 2806); Avner Greif, *Reputation and Coalitions in Medieval Trade: Evidence on the Maghribi Traders*, 49 J. ECON. HIST. 857 (1989) [hereinafter Greif, *Reputations and Coalitions*] (Google Scholar citations, 1530); Avner Greif, *Cultural Beliefs and the Organization of Society: A Historical and Theoretical Reflection on Collectivist and Individualist Societies*, 102 J. POL. ECON. 912 (1994) [hereinafter Greif, *Theoretical Reflection*] (Google Scholar citations, 2699). Even his harshest critics acknowledge that his work is highly influential and plays a central role in debates over how to facilitate economic development and the role private institutions can play in supporting exchange. See Jeremy Edwards & Sheilagh Ogilvie, *Contract Enforcement, Institutions, and Social Capital: The Maghribi Traders Reappraised*, 65 ECON. HIST. REV. 421, 422 (2012) (noting that Greif's explanation of the Maghribi trade "has come to dominate the social science literature," and that it "is widely used to draw lessons for modern economies," and "plays an influential role in theories of economic and institutional development"); Jessica Goldberg, *Choosing and Enforcing Business Relationships in the Eleventh-Century Mediterranean: Reassessing the 'Maghribi Traders'*, 216 PAST & PRESENT 3, 7, 9 (2012) [hereinafter Goldberg, *Business Relationships*] (suggesting that it is "important to establish precisely how Geniza merchants used private and public mechanisms, since [in light of Greif's work] this question has become fundamental to widely held views about historical and modern economic development" and "a cornerstone for arguments about the role of both institutions and cultural beliefs in economic development."); see also THE WORLD BANK, WORLD DEVELOPMENT REPORT 2002: BUILDING INSTITUTIONS FOR MARKETS 3–8 (2002), <http://documents.worldbank.org/curated/en/850161468336075630/World-development-report-2002-building-institutions-for-markets> [<https://perma.cc/YR2B-URU5>] (looking to the Maghribi traders as a paradigmatic example of successful private ordering).

² See Avner Greif, *The Fundamental Problem of Exchange: A Research Agenda in Historical Institutional Analysis*, 4 EUROPEAN REV. ECON. HIST. 251, 257 (2000) [hereinafter Greif, *Agenda*] (defining an "institution" as "a system of social factors – such as rules, beliefs, norms, and organisations – that guide, enable, and constrain the actions of individuals").

³ See Greif, *Early Trade*, *supra* note 1, at 531–35 (providing a formal model of the traders' coalition); see also AVNER GREIF, INSTITUTIONS AND THE PATH TO THE MODERN ECONOMY: LESSONS FROM MEDIEVAL TRADE 58–90 (2006) [hereinafter GREIF, *PATH*] (providing a less formal description of the coalition theory that sets out the intuitions behind the model).

⁴ Goldberg, *Business Relationships*, *supra* note 1, at 12 (noting that in addition to Egypt, the Islamic Mediterranean "included much of Iberia, all of North Africa, and parts of Sicily and the Levant").

⁵ Greif emphasizes that the trust observed among the Maghribi was not the product of "social control systems or ethics." See Greif, *Reputations and Coalitions*, *supra* note 1, at 859. Rather, it was the observed equilibrium outcome of the operation of the traders' coalition under the conditions assumed in his model. *Id.* However, his explanation of the origins and operation of the traders' coalition is based on his view that "the Maghribis' social identity provided the means to coordinate expectations required for the functioning of the coalition," Greif, *Early Trade*, *supra* note 1, at 539, and relies on his observation that

organizational framework through which agency relations [were] established only among [those] with a specific identity.”⁶ Interactions among the traders were governed by an “implicit contract” that had its roots in the Maghribis’ collectivist culture.⁷ The implicit contract required “each coalition merchant [to] employ only member agents and [to] pay them the optimal [wage] premium.”⁸ It also involved a commitment by “all coalition merchants . . . never to employ an agent who cheated while operating for a coalition member,” as well as an understanding that “if an agent who was caught cheating operates as a merchant, coalition agents who cheated in their dealing with him will not be considered . . . to have cheated.”⁹ As Greif explains, under these conditions, cooperation should, and did, emerge as a stable equilibrium, making it possible for trade to flourish among the Maghribi with weak, if any, meaningful support from either Jewish or Muslim courts.

Since Greif wrote, historians have attacked the coalition theory as being inconsistent with aspects of the historical record.¹⁰ Most importantly, they

the Maghribi were a “collectivist” society in which “cultural factors made collective punishment a focal point.” Greif, *Agenda*, *supra* note 2, at 273; *see also* Greif, *Theoretical Reflection*, *supra* note 1 (discussing the Maghribis’ collectivist culture).

⁶ Greif, *Reputations and Coalitions*, *supra* note 1, at 868.

⁷ *See generally* Greif, *Theoretical Reflection*, *supra* note 1 (discussing the Maghribis’ collectivist culture).

⁸ Greif, *Reputations and Coalitions*, *supra* note 1, at 868. It is unclear from Greif’s analysis how this wage premium was paid in a system where the dominant form of exchange, the *suhba*, was one in which the traders exchanged services of equal value that could nevertheless be quite different in kind. *See infra* text accompanying notes 24–26. Greif posits that the wage premium might have been “paid” through the “quality of services and outcomes,” the principal performed in exchange for his agent’s services or by his overperforming. Email from Avner Greif, Professor of Econ., Stanford Univ., to author (Apr. 21, 2018) (on file with *Northwestern University Law Review*). However, this would have increased what his *suhba* partner was obligated to do in return, making this condition difficult to meet in practice. Moreover, in a context where reputation is used to bond trade and it is difficult to determine *ex post* whether undesirable outcomes result from bad luck or willful malfeasance or negligence, overperformance will often be a rational strategy, independent of any desire to provide a wage premium. *See infra* notes 160–164 and accompanying text. Finally, since agents could be hired for a wage, it is peculiar that this was an uncommon arrangement if a wage premium in fact drove the success of the hypothesized coalition.

⁹ Greif, *Reputations and Coalitions*, *supra* note 1, at 868.

¹⁰ For the work of the historians who have most directly critiqued Greif’s overall theory, *see* JESSICA L. GOLDBERG, *TRADE AND INSTITUTIONS IN THE MEDIEVAL MEDITERRANEAN: THE GENIZA MERCHANTS AND THEIR BUSINESS WORLD* (2012) [hereinafter GOLDBERG, *TRADE AND INSTITUTIONS*]; Goldberg, *Business Relationships*, *supra* note 1; and Edwards & Ogilvie, *supra* note 1. Greif has responded forcefully to the Edwards and Ogilvie critique. He maintains (among other things) that they: misstated his arguments; used a flawed methodological approach to economic history; presented examples that properly understood actually advance his theory; and put forth flawed arguments “based on unfamiliarity with the original documents, misrepresentations of the literature, and misapprehension of the historical context and methodology.” *See* Avner Greif, *The Maghribi Traders: A Reappraisal?* 6 (Mar. 2012), https://web.stanford.edu/~avner/Greif_Papers/2012_Greif_long_ssrn_Maghribi.pdf

point out that “there is no evidence to suggest that the Geniza merchant community ever excluded a full-fledged merchant, or had the power to do so”;¹¹ the letters do not reflect the transmission of the type of information needed for a system of reputation-based trade to function; and the Maghribis’ use of standard legal forms and observance of so many legal formalities suggests that they wanted to at least preserve the option of resorting to legal enforcement of contracts (which they sometimes did). These and other considerations lead them to conclude that a traders’ coalition did not exist and that although “threats to reputation were occasionally used by Geniza merchants to help prevent cheating,”¹² reputation-based governance was not the dominant way of organizing exchange. Rather, it was “only . . . a very minor plank laid on top of an important framework of market and legal institutions.”¹³ According to this view, the “Maghribis provide no support for the idea that the ‘social capital’ of exclusive, private-order networks can substitute for legal mechanisms to support economic development.”¹⁴

Drawing on the approximately 200 Maghribi letters available in English¹⁵ and the work of leading scholars of the Geniza,¹⁶ this Article develops a network governance-based account of the way that private ordering might have supported exchange among the Maghribi traders with

[<https://perma.cc/2SPF-CBRQ>] [hereinafter Greif, A Reappraisal?]. For a shorter version of the piece, see Avner Greif, *The Maghribi Traders: A Reappraisal?*, 65 *ECON. HIST. REV.* 445 (2012).

¹¹ GOLDBERG, *TRADE AND INSTITUTIONS*, *supra* note 10, at 150; *see also* Edwards & Ogilvie, *supra* note 1, at 421 (“Not a single empirical example adduced as evidence of the putative coalition shows that a coalition actually existed.”). Greif responded to this critique empirically. He argued that “[t]he Maghribi traders’ letters directly support the [coalition] hypothesis by indicating that the Maghribis practiced MPS,” that is, a multilateral punishment strategy, and proffered several letters to demonstrate the operation and strength of the traders’ coalition. Greif, *Early Trade*, *supra* note 1, at 535. *But see infra* note 180 (discussing the key letters Greif invokes to support this claim). He also points out that a complete boycott would not have been necessary for the traders’ coalition to have supported trade. Email from Avner Greif, Professor of Econ., Stanford Univ., to author (Oct. 4, 2016) (on file with *Northwestern University Law Review*).

¹² Goldberg, *Business Relationships*, *supra* note 1, at 32.

¹³ *Id.*

¹⁴ Edwards & Ogilvie, *supra* note 1, at 442.

¹⁵ These letters can be found in S. D. GOITEIN, *LETTERS OF MEDIEVAL JEWISH TRADERS* (1973) [hereinafter GOITEIN, *LETTERS*]; I. SHLOMO SIMONSOHN, *THE JEWS IN SICILY* (1997); ABRAHAM L. UDOVITCH, *FURTHER LETTERS FROM THE ELEVENTH CENTURY CORRESPONDENCE OF NAHRAY BEN NISSIM: MERCHANT, BANKER AND SCHOLAR* (1992) [hereinafter UDOVITCH, *NAHRAY LETTERS*]; and Norman Arthur Stillman, *East-West Relations in the Islamic Mediterranean in the Early Eleventh Century: A Study in the Geniza Correspondence of the House of Ibn ‘Awkal* (1970) (unpublished Ph.D. dissertation, University of Pennsylvania) (on file with *Northwestern University Law Review*) [hereinafter Stillman, *Dissertation*].

¹⁶ The Geniza scholars relied on are S.D. Goitein, Avrom L. Udovitch, Philip Ackerman-Lieberman, Moshe Gil, Norman Stillman, and Marina Rustow.

little or no reliance on the public legal system.¹⁷ It shows how given the small-world pattern of ties characteristic of the Maghribi network—dense connections among the traders in each trading center and sparser connections across trading centers that nevertheless linked traders through a small number of steps—information could have circulated widely enough to make multilateral reputation-based private ordering an effective way of bonding exchange, even in the absence of a formal or informal traders’ coalition with obligations of mutual support, limited membership, and the power to exclude. The account is sensitive to the concerns raised by the historians, yet reveals that the aspects of the Maghribi trade they view as evidence that legal enforcement was central to the support of exchange are also consistent with the network-based theory of private ordering presented here.

More broadly, identifying the contract governance properties of small-world networks, as well as smaller subnetwork structures that can also contribute to the support of exchange, opens up new ways of thinking about how trade is, or can be, supported in a variety of modern markets, even those in countries with well-functioning legal systems. The economic forces that give rise to small-world networks are common in exchange settings,¹⁸ and this configuration of ties has also been shown to facilitate innovation, an increasingly important focus of contemporary contracting relationships.¹⁹ These considerations suggest that the legal literature on private ordering should move beyond its focus on small, geographically concentrated, close-knit groups (known as dense clique networks)²⁰ and begin to explore the wide

¹⁷ Greif and his historian critics Edwards, Ogilvie, and Goldberg occasionally allude to the Maghribi as a network of traders. However, they use the word “network” as a loose metaphor for the connections among traders, and, on occasion, as a way of describing conduits for information transfer. GREIF, PATH, *supra* note 3, at 59, 83 (“[T]he informal social networks for information transmission, which became available to the Maghribis in the process of immigrating to Tunisia, enabled them to support agency relations based on a multilateral punishment strategy.”); Goldberg, *Business Relationships*, *supra* note 1, at 17 (“Jewish Geniza Merchants . . . were a loose network, and each merchant had to construct his own web of *ashāb* [associates] if he wanted to extend multiple activities across space.”); Edwards & Ogilvie, *supra* note 1, at 442 (arguing that the Maghribi were not a “group,” but rather “formed multiple, overlapping networks,” and in this respect were similar to other trading groups at the time). However, none of these scholars delve into how the structure of the network—that is, the pattern of connections between both traders and trading centers—might help explain aspects of contract governance such as the use of multilateral sanctions, which trades or traders would be subject to the strongest governance forces, or the type of information one would expect to find in the Geniza letters.

¹⁸ See *infra* note 181 and accompanying text (discussing the economic conditions under which small-world networks are likely to arise).

¹⁹ See *infra* note 289 and accompanying text.

²⁰ For case studies of clique networks, see Lisa Bernstein, *Opting Out of the Legal System: Extralegal Contractual Relations in the Diamond Industry*, 21 J. LEGAL STUD. 115 (1992) [hereinafter Bernstein, *Diamonds*], and ROBERT C. ELLICKSON, ORDER WITHOUT LAW: HOW NEIGHBORS SETTLE DISPUTES (1991).

variety of network structures—across markets or between subsets of firms—that can be used to support exchange.

Part I of this Article describes the structure of ties within and across the major Maghribi trading centers. It demonstrates that the market as a whole took the form of a small-world network²¹ that created pathways for the flow of information that could well have made the fear of multilateral reputational harm a powerful contract governance mechanism. Part II explores how the small-world structure of the Maghribi network was able to support exchange, and the ways that its ability to do so was enhanced by the existence of a few prominent information nodes in each market, a variety of common market practices, and the structure of ties among some smaller subgroups of traders. Part III revisits the debate between Greif and his historian critics over whether private or public ordering was likely to have been the primary contract governance device relied on by Maghribi merchants. It suggests that many aspects of the Maghribi trade that historians view as indicative of reliance on legal institutions are equally consistent with the network governance-based account of the Maghribi trade. It also suggests that exploring the ways that legal formalities can support private ordering is important to understanding the implications of the Maghribi traders for using private order institutions as a complement to, rather than merely a substitute for, legal institutions in developing economies. The Article concludes by suggesting that given the ubiquity of small-world networks in trade, gaining a more nuanced understanding of the way they can support exchange should make it possible to identify additional contexts in which private ordering is likely to be able to meaningfully contribute to contract governance, both in the presence and in the absence of a well-functioning public legal system.

I. THE MAGHRIBI TRADERS AS A SMALL-WORLD NETWORK

The Maghribi traders were a group of Jewish merchants who engaged in long-distance trade across the Islamic Mediterranean in the eleventh century.²² They traded in numerous commodities, including flax, copper, olive oil, textiles, and wax.²³ These merchants sometimes entered into partnerships and occasionally hired one another as agents for a wage. More commonly, they used one another as reciprocal agents under a legally

²¹ See Duncan J. Watts, *Networks, Dynamics, and the Small-World Phenomenon*, 105 AM. J. SOC. 493 (1999) (providing a formal definition of a small-world network); see also Qawi K. Telesford et al., *The Ubiquity of Small-World Networks*, 1 BRAIN CONNECTIVITY 367, 367 (2011) (noting that small-world networks have “unique properties of regional specialization with efficient information transfer”).

²² GREIF, PATH, *supra* note 3, at 61 (defining the Maghribi as a group of Jewish traders whose families migrated from Baghdad to North Africa and then fanned out across the Islamic Mediterranean).

²³ For an overview of the commodities traded, see GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, ch. 8.

unenforceable form of agreement known as a *suhba*.²⁴ Under a *suhba*, a trader who asked his agent to undertake a task on his behalf became obligated to perform a task of equal value in return. The tasks exchanged, however, could be different in kind or scope.²⁵ A trader of great importance might ask a trader of little importance to spend two weeks gathering flax on his behalf. In exchange, and in full satisfaction of his obligation, the important trader might simply pen a short note introducing his agent to other traders. These agency arrangements created significant economic benefits. Freed from the need to travel alongside their goods, merchants were able to operate in many markets simultaneously and create a diversified portfolio of trading activities.²⁶

What is known about the commercial activities of these traders comes from a cache of commercial letters and other documents deposited in the Cairo Geniza, a synagogue-connected storage house for documents containing the name of God.²⁷ During this period, letters were an important means by which information flowed between markets. Merchants used letters to instruct their agents, and agents used them to report back to merchants. Letters were also used to provide the names of witnesses to transactions as well as information about prices, the arrival and departure of ships, and other relevant market conditions. The letters “read much like the financial pages of a modern day newspaper.”²⁸

²⁴ “The ‘service for service’ part of this relationship was *not* subject to contract,” and neither party had a “right to sue the other for inaction or inadequate work” or additional money when his efforts went beyond what he was obligated to do. Goldberg, *Business Relationships*, *supra* note 1, at 21.

²⁵ A flavor of the norm of reciprocity that characterized *suhba* dealings can be gleaned from the letters written by Nissim b. Hafon in Alexandria to his *suhba* partner Nahray Nissim in Fustat. See UDOVITCH, NAHRAY LETTERS, *supra* note 15, at Letters #13–25. Under a *suhba* traders made specific requests of their agents. However, because trading conditions were highly unstable, agents were commonly given a free hand to use their own judgment when unanticipated market changes occurred. See Stillman, Dissertation, *supra* note 15, at 77 (concluding that grants of broad authority were consistent with “one of the business maxims of the day . . . that ‘one who is present sees what one who is absent cannot’”); *id.* at 289 Commercial Letter # 4 (a trader asks Awkal to buy pearls on his behalf, but notes that if they “should be scarce this year, . . . you, my master, have a free hand in whatever you decide to choose”).

²⁶ See Greif, *Early Trade*, *supra* note 1, at 528.

²⁷ “A *geniza* is a place where Jews locked away writings on which the name of God was or might have been written” until they could be buried in accordance with Jewish law. Greif, *Reputations and Coalitions*, *supra* note 1, at 859. The Cairo Geniza “contain[ed] about a thousand contracts, price lists, traders’ letters, accounts, and other documents that reflect eleventh-century trade in the Muslim Mediterranean.” GREIF, PATH, *supra* note 3, at 60. For a detailed description of the documents in the Geniza, see GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 5–11.

²⁸ Norman A. Stillman, *The Eleventh Century Merchant House of Ibn ‘Awkal (A Geniza Study)*, 16 J. ECON. & SOC. HIST. ORIENT 15, 24 (1973) [hereinafter Stillman, *Merchant House*].

Seventy percent of the letters contain discussions in which “merchants are assessing each other’s conduct – whether past, present, or prospective,”²⁹ along with the conduct of third parties.³⁰ According to historians, these letters are best understood as a form of “substitute speech, allowing each merchant to participate in the talk of markets scattered around the Mediterranean.”³¹

Commercial news was also carried by itinerant traders. “[T]ravelers’ tales” suffused with information about far flung locations circulated widely and had the potential to add information; yet merchants were wary of relying on “rumors circulating about distant places [that] might be magnified by echo. . . . That is, they worried that talk within a small and interested community had a tendency to magnify some reports and discount others, in keeping with the norms or worries of the group.”³² As one merchant wailed,

No one has been repudiated as much as I have been, and has been put in jeopardy as much as I have. . . . [I]f I had greeted somebody, he would have replied: you owe money Everyone would say it in his fashion. One would say: a hundred, and the other: five hundred. . . . These days, . . . it became . . . a thousand gold coins.³³

Given the traders’ intuitive understanding of echo, “the business reports from travelers that were most valued . . . were their notes of which other ships had departed at the same time, how many ships were still loading, which ships had fallen behind – these were eyewitness reports of activity en route that could be verified in multiple ways.”³⁴

²⁹ GOLDBERG, *TRADE AND INSTITUTIONS*, *supra* note 10, at 78.

³⁰ *Id.* at 79.

³¹ *Id.*; *id.* at 83–84 (“The speech-like form of letters made blunt comments about others possible as mere hasty words; the semi-public, semi-private nature of letters made it feasible to disseminate such comments through a community without making them truly public”); *id.* at 64 (“Business correspondents shared this sense of the letter as a stand-in for the speaker.”).

³² *Id.* at 197–98. Echo effects may arise when information flows through relatively closed (that is small, densely connected) social networks. See RONALD S. BURT, *BROKERAGE AND CLOSURE: AN INTRODUCTION TO SOCIAL CAPITAL* 167–223 (2007) (discussing echo as a characteristic of closed or semi-closed networks and noting that under certain conditions echo can push assessments of an individual’s reputation to extremes of good or bad).

³³ SIMONSOHN, *supra* note 15, at Letter #105; *id.* at Letter #109 (“You know very well that nothing is hidden from our friends, and they embellish every fact.”).

³⁴ GOLDBERG, *TRADE AND INSTITUTIONS*, *supra* note 10, at 198. Nevertheless, some travelling traders might have gathered and communicated generalized reputation information more accurately than others. For example, some traders were “associated with more than one region, often including maintaining a second home.” *Id.* at 269. And, during the “Ibn ‘Awkal period many (though not all) merchants would retain their residence in the Islamic West while perhaps renting a secondary home in Egypt” *Id.* at 43. Given this, while echo might still have introduced some distortions, these travelling merchants would have had the opportunity to observe a great deal of commercial behavior first-hand and their desire to maintain their own reputation in both markets would likely have made them attentive to moving only reliable and accurate information between them.

The largest merchants corresponded with several agents in each of the largest trading centers, enabling them to triangulate information. Agents knew that their principals would be receiving reports from others in their location and that any misreporting of information would be detected. They therefore had a strong incentive to report local conditions accurately.

To understand how a private order system of contract enforcement based on network governance might have operated across the large and geographically dispersed Maghribi trading area, it is important to reconstruct the ties among traders and trading centers that created the pathways through which information about trading conditions, trading activities, and reputation might have travelled both within and across markets. While the historical record does not permit a complete reconstruction of these connections, it does offer information about several aspects of the Maghribi trade that together make it possible to approximate the overall structure of the relevant connections among traders—including information about the trading routes, the postal routes, the structures of ties in each local market, the ties among the largest overseas traders in each of the main trading centers, as well as the ties among the most important institutional intermediaries (the Merchants' Representatives) in each of the main trading centers.

A. Trading and Postal Routes

The overall structure of the connections between trading centers might be very roughly approximated using either the trading routes or the similar, though not identical, postal routes through which many, though by no means all, letters were sent.³⁵ Yet because the flow of information—and with it the networks' governance force—appears to have been more closely linked to the postal routes than the trading routes (perhaps because the Maghribi trusted written communications more than the gossip of the marketplace) the postal routes seem to be the more appropriate proxy for the pattern of the relevant connections.

The importance of the postal routes to the flow of business and reputation-relevant information is suggested by the finding that agency relations involving a location outside the postal routes were far more problematic than those that took place within it. When an agent was outside the postal routes, there was a “high rate of dissatisfaction – more than 50 percent of the trading transactions described outside the postal network are

³⁵ Some merchant letters were sent through the postal system or through one of the private courier services that plied similar routes. Other letters were sent with several travelling merchants at the same time to increase the likelihood that at least one copy would be delivered. GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 351.

the subject of either complaint about agent behavior or report of loss.”³⁶ In these transactions, “misunderstandings and dissatisfaction abounded” in part because the lack of a postal infrastructure resulted in “market blindness,” meaning that “the general market price and actions of others couldn’t be known through a stream of letters.”³⁷ These types of problems are what would be expected if the postal routes were in fact transmitting the type of information needed for the force of network governance to play a key role in supporting exchange. The most significant routes are those that connected the three most important trading centers—Egypt, Sicily and Tunisia;³⁸ they are pictured in Appendix A.

To get a better feel for how information flowed across this network and where in the market reputation would have played a more or less significant role in bonding trade, it is useful to look in more detail at the pattern of connections between traders within local trading centers (clusters), as well as the connections among the largest traders and their associates across the most important trading centers. Combining this information with the postal routes reveals that the Maghribi network was structured as a classic small-world network—that is, a network in which dense clique-like clusters of traders (here the traders in local trading centers) are connected to one another by a set of ties (those among the largest overseas traders and among key market functionaries) that, while relatively small in number,³⁹ are configured in such a way that the average number of nodes (in this case individuals) that a trader would have to go through to get information about a random other trader in another trading center is nonetheless relatively small. It is a structure that, as discussed in Part II below, has potentially strong contract governance properties.⁴⁰

³⁶ *Id.* at 196.

³⁷ *Id.*

³⁸ *Id.* at 319 (“Travel between Egypt and the markets of Ifṭīqiyya [in Tunisia] and Sicily was at the heart of the long-distance commodity trade for both generations of eleventh-century Geniza traders.”).

³⁹ The Geniza documents, however, provide only a partial picture of the connections among traders and trading centers. It is possible that connections between traders and across trading centers were denser than can be established on the basis of the historical record.

⁴⁰ A key assumption of Greif’s coalition model is that “[t]he social structure of the Maghribi traders’ group was ‘horizontal,’” because “traders functioned as agents and merchants at the same time,” Greif, *Early Trade*, *supra* note 1, at 539, and “the Maghribi traders group was a homogenous group of middle-class traders,” Greif, *Agenda*, *supra* note 2, at 269. However, there is a great deal of evidence that the largest markets had some traders who were demonstrably larger or better connected than others but who also dealt with a large number of smaller traders. *See infra* notes 60–130. The difference is important because once the existence of these larger traders is recognized, the ability of a coalition to exclude them becomes highly questionable. *See infra* notes 165–170 and accompanying text.

B. Interpersonal Ties

1. Ties Within Trading Centers

Within each trading center, the Maghribi were connected by ties of business, family, community, and religion.⁴¹ Under Muslim rule, minority groups were granted wide-ranging autonomy. “The administration of their own affairs was left to [the groups] themselves,”⁴² and the “generally small Jewish communities”⁴³ created their own religious and quasi-governmental institutions that enabled them to remain a cohesive social group. The synagogue was at the center of community life. “[E]veryone attended service[s] at least on Saturday”⁴⁴ The building was also used for community-wide “discussion[s] of public affairs,”⁴⁵ and “served so many cultural and communal purposes that its character as a house of worship became blurred.”⁴⁶ The Maghribi traders were fully integrated into Jewish communal life and “formed the professional, commercial, legal, administrative, and communal backbone of the Jewish communities where they lived.”⁴⁷ Nevertheless, in their business affairs they dealt primarily (though not exclusively) with one another.

Within each trading center, most exchange was carried out in public and semi-public markets. Traders actively sought to have their transactions “witnessed by as many trustworthy and easily available persons as possible.”⁴⁸ Goods were also sold at public auction, providing another occasion for traders to meet. Together, the social and communal bonds among traders⁴⁹ and the connections formed in their routine work-a-day

⁴¹ See generally 1–5 S. D. GOITEIN, *A MEDITERRANEAN SOCIETY: THE JEWISH COMMUNITIES OF THE WORLD AS PORTRAYED IN THE DOCUMENTS OF THE CAIRO GENIZA* (1967) [hereinafter GOITEIN, *SOCIETY*] (providing a richly detailed account of Jewish life across the Muslim Mediterranean with an emphasis on business practices, community structure, religious life, and politics).

⁴² 2 GOITEIN, *SOCIETY*, *supra* note 41, at 1–3.

⁴³ 1 GOITEIN, *SOCIETY*, *supra* note 41, at 73.

⁴⁴ 2 GOITEIN, *SOCIETY*, *supra* note 41, at 1, 55–58.

⁴⁵ *Id.* at 57.

⁴⁶ *Id.* at 156.

⁴⁷ GOLDBERG, *TRADE AND INSTITUTIONS*, *supra* note 10, at 45; see also Greif, *Reputations and Coalitions*, *supra* note 1, at 860, 862 (noting that while “the Maghribi immigrants integrated into existing Jewish communities” and “did not establish a separate religious-ethnic community,” “they also retained a strong sense of identity and solidarity among themselves”).

⁴⁸ 1 GOITEIN, *SOCIETY*, *supra* note 41, at 196.

⁴⁹ Although the Maghribi were careful to “segregate professional reputation from general social reputation,” GOLDBERG, *TRADE AND INSTITUTIONS*, *supra* note 10, at 49, their social ties could have been conduits for reputation-relevant information.

business interactions resulted in a clique-like set of dense ties among the Maghribi traders in each locale.⁵⁰

In markets with a clique-like structure, information tends to circulate as the near costless by-product of everyday interactions. Cliques are the clearest and most intuitive context in which the pattern of ties among market participants gives rise to what is called a closed network—that is, a context in which information about misbehavior becomes quickly and extensively known (or knowable) across the relevant group of traders.⁵¹ As case studies have shown⁵² and theorists have suggested,⁵³ reputational forces can be an effective way of supporting trade within cliques.

The circulation of information within the main trading centers was also facilitated by the large merchants in each center who engaged in extensive overseas trading. Their success in these endeavors depended in large part on their “belonging to the local economy [in their home market], with a local reputation, local connections, . . . personal customs privileges,”⁵⁴ and access to the “legal and credit community.”⁵⁵ Without these “deep [local] ties,”⁵⁶ the value of the services they could offer their overseas partners would have been limited. Overseas partners or overseas traders with whom a local merchant had a *suhba* “hope[d] to profit from all the aspects of his friend’s [that is, his fellow trader’s] localism.”⁵⁷ As a consequence, merchants who engaged in overseas trade had an incentive to create and maintain ties in their home trading center and to participate actively in the gossip of the marketplace.⁵⁸

Finally, a practice of local governments across the trading area gave all of the merchants in a particular locale, regardless of their size and

⁵⁰ GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 83 (“[M]ost of these men [within a particular locale] were members of small, close-knit communities bound by multiple social ties . . .”).

⁵¹ BURT, *supra* note 32, at 95 (defining closed networks as “networks in which people are connected such that no behavior goes unnoticed”); *id.* at 97 (noting that “[t]he stronger the third-party ties connecting two people, the more closed [is] the network around them”).

⁵² For an example of reputation-based governance within small groups, see Bernstein, *Diamonds*, *supra* note 20. For the seminal study of the role of small ethnic groups in the support of exchange, see Janet T. Landa, *A Theory of the Ethnically Homogeneous Middleman Group: An Institutional Alternative to Contract Law*, 10 J. LEGAL STUD. 349 (1981).

⁵³ See S. Nageeb Ali & David A. Miller, *Ostracism and Forgiveness*, 106 AM. ECON. REV. 2329 (2016) and sources cited therein. For an overview of the sociological view that embeddedness in general can support trade, see Mark Granovetter, *Economic Action and Social Structure: The Problem of Embeddedness*, 91 AM. J. SOC. 481 (1985).

⁵⁴ GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 292–93.

⁵⁵ *Id.*

⁵⁶ *Id.* at 295.

⁵⁷ *Id.* at 353.

⁵⁸ *Id.* at 203 (“Merchants in their home bases were information hubs for travelers: they received letters to forward, received notes in their letters asking them to look for, speak to, and report on travelers, and . . . served as witnesses who were expected to report back on the activities of travelers.”).

prominence, an incentive to remain aware of the activities of other local merchants. Throughout the eleventh century, Muslim government officials who wanted to “sustain the reputation of the [local] market” sometimes required local merchants “to swallow losses when one of their fellows went bankrupt so that [foreign merchants] could be paid.”⁵⁹ Merchants therefore had a personal financial stake in helping to ensure the solvency of all traders in their locale.

2. *Ties Between Trading Centers*

The Maghribi faced numerous challenges in supporting overseas and inter-market trade. The most important trading centers—Egypt, Tunisia, and Sicily—were distant from one another.⁶⁰ The flow of information between them was slow and subject to unpredictable disruptions.⁶¹ Many things outside of the traders’ control—ranging from price volatility to bad weather, to political instability, to pirates roaming the seas⁶²—could disrupt even the most routine transactions. It was therefore difficult for traders to determine on the basis of an undesirable outcome alone whether any malfeasance took place.

Yet a closer look at the trading activities of the largest merchants in Egypt, Tunisia, and Sicily, coupled with a closer examination of the institutions and organization of the Maghribi trade, reveals that the ties across trading centers were configured in a way that helped to ensure that information about misbehavior could have spread (or been obtainable) widely enough, through only a small number of ties, to transform the entire trading area (or at least important subparts of it) into a semi-closed network—a context where reputation can be a powerful, if somewhat imperfect, way of governing trade.

The flow of information across the three largest trading centers (Egypt, Sicily, and Tunisia) was facilitated by the presence in each center of an especially prominent merchant or closely connected group of merchants, whose size and scope of operation dwarfed the activities of the average merchant.⁶³ The largest merchants were connected to one another both within

⁵⁹ *Id.* at 351.

⁶⁰ Stillman, Dissertation, *supra* note 15, at 44 (noting that it took “a little more than a month” for a ship to sail from Egypt to Tunisia, “while the journey overland took far longer”).

⁶¹ See, e.g., Greif, *Reputations and Coalitions*, *supra* note 1, at 860 (“A journey from Egypt to Sicily . . . could take from 13 to 50 days . . .”).

⁶² See SIMONSOHN, *supra* note 15, at Letter #48 (mentioning “great hardships from pirates and other matters”); *id.* at Letter #162 (mentioning pirates).

⁶³ Marina Rustow, *Tahertī Family*, BRILL (2010), https://referenceworks-brillonline-com.turing.library.northwestern.edu/entries/encyclopedia-of-jews-in-the-islamic-world/taherti-family-SIM_0020800?s.num=0&s.f.s2_parent=s.f.book.encyclopedia-of-jews-in-the-islamic-world&s.q=taherti [https://perma.cc/SK22-TAL8] (“Together with the houses of Ibn ‘Awkal, al-Tustarī,

and across the major trading centers by business and sometimes family ties. These ties created enduring pathways for the transmission of market and reputation-related information, which helped to ensure that information could either traverse the trading area or be obtained when needed by passing through only a small number of merchants.

The two most significant Maghribi merchants, Ibn Awkal and Nahray Nissim, operated out of Fustat (Old Cairo), the most important trading center.⁶⁴ It is their commercial correspondence and the correspondence of their closest business associates that comprise the bulk of the letters archived in the Geniza.⁶⁵ To get a feel for the structure of these channels of information flow, it is useful to consider the ties among the largest and most central merchants in the main trading centers during both the Awkal and Nahray generations.⁶⁶

a. *The Ibn Awkal Generation*

Ibn Awkal, a so-called “merchant prince,”⁶⁷ was “[t]he most prominent [of the] Egyptian merchants in the first third of the eleventh century.”⁶⁸ He was a largely stationary merchant,⁶⁹ but he traded across the Mediterranean

and Nahray ben Nissim, the Tāhertīs were, in terms of volume of trade, one of the largest and most powerful mercantile operations of their era.”).

⁶⁴ See 1 GOITEIN, *SOCIETY*, *supra* note 41, at 159 (“Cairo during the eleventh century was the exclusive metropolis of commerce and finance in Egypt . . .”); Stillman, *Dissertation*, *supra* note 15, at 5, 17, 162 (noting Egypt and Fustat’s central role in the eleventh-century trade across the Muslim Mediterranean).

⁶⁵ GOLDBERG, *TRADE AND INSTITUTIONS*, *supra* note 10, at 36 (noting that the merchants who “wrote or received these [Geniza] letters” were part of the “circles associated with Ibn ‘Awkal and Nahray”).

⁶⁶ The connections described in the text and in Figures 1 and 2, *infra*, were chosen to make the overall structure of the Maghribi network clear. Other important channels of communication existed as well. One such channel ran through Alexandria and connected Alexandria, Fustat, Sicily, and Tunisia. Ibn Awkal’s “chief agent in Alexandria” was Ismail al-Jawhari, Stillman, *Dissertation*, *supra* note 15, at 293, who was the nephew of Awkal’s long-term agent in Tunisia, Majjani, with whom he was in regular contact. Jawhari was also in contact with Awkal’s nephew in Sicily. MOSHE GIL, *JEWS IN ISLAMIC COUNTRIES IN THE MIDDLE AGES* 686 (David Strassler trans., 2004) (1997) [hereinafter GIL, *JEWS*]. Awkal had other agents in Alexandria as well, including Joseph b. Yeshua, one of his “less important agents,” Stillman, *Dissertation*, *supra* note 15, at 349, and Abraham b. Joseph, GOITEIN, *LETTERS*, *supra* note 15, at Letter #14, who was in contact with Awkal’s nephew in Sicily as well. *Id.*

Nahray also had many business associates in Alexandria. These included Murduk b. Musa, who “served as Nahray’s agent and occasional partner,” UDOVITCH, *NAHRAY LETTERS*, *supra* note 15, at 4, and who also dealt with the Tahertis, SIMONSOHN, *supra* note 15, at Letter #118, and Awwad b. Hananel, an “associate of Nahray” to whom he had “kinship and personal ties,” UDOVITCH, *NAHRAY LETTERS*, *supra* note 15, at 4, and who also had ties to Majjani, *id.* at Letter #11.

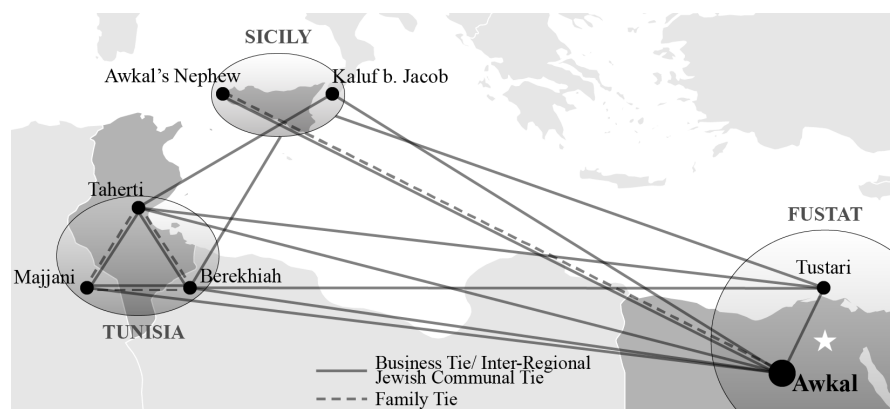
⁶⁷ Stillman, *Merchant House*, *supra* note 28, at 16.

⁶⁸ GIL, *JEWS*, *supra* note 66, at 679; Stillman, *Merchant House*, *supra* note 28, at 19.

⁶⁹ Shelomo D. Goitein, *Mediterranean Trade Preceding the Crusades: Some Facts and Problems*, DIOGENES, Sept. 1, 1967, at 47, 55 [hereinafter Goitein, *Crusades*].

through his many agents and partners.⁷⁰ In addition to his central role in merchant affairs, Awkal's influence in the Egyptian Jewish community was "enormous . . . by virtue of his great wealth,"⁷¹ and his role in moving money and rabbinic documents across the trading area all the way to Jerusalem.⁷² This role further embedded him in the flow of information across the entire Maghribi trading area. The ties among Awkal and the largest traders are pictured and described below.⁷³

FIGURE 1: TRADING TIES DURING THE AWKAL GENERATION



During the Awkal period, there was a powerful group of Tunisian traders⁷⁴ who were connected to one another by ties of marriage and business. This group included the Taherti family, "one of the largest and most powerful mercantile operations of their era,"⁷⁵ who occupied "a true situation

⁷⁰ Awkal's family members travelled widely to conduct business on his behalf. Stillman, *Merchant House*, *supra* note 28, at 20.

⁷¹ Elinoar Bareket, *Ibn 'Awkal Family*, BRILL (2010), https://referenceworks-brillonline-com.turing.library.northwestern.edu/entries/encyclopedia-of-jews-in-the-islamic-world/ibn-awkal-family-SIM_0010170?s.num=0&s.f.s2_parent=s.f.book.encyclopedia-of-jews-in-the-islamic-world&s.q=awkal [https://perma.cc/55UQ-JJT6]; *see also* GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 332 ("Ibn 'Awkal's trading . . . was of a magnitude greater than the rest of the group.").

⁷² Bareket, *supra* note 71.

⁷³ The picture of ties that emerges from the description below is one in which there is a tier of large traders with very strong ties to one another, and some traders who, while not particularly wealthy, are quite well-connected across markets. *See, e.g., infra* note 180 (discussing the ties of Yeshua b. Ismael of Alexandria). Greif, in contrast, has a different view of the Maghribis' social structure. *See supra* note 40 and sources cited therein.

⁷⁴ Stillman, *Dissertation*, *supra* note 15, at 5 ("Tunisia in the tenth century rose to a central position in the Mediterranean trade.").

⁷⁵ Rustow, *supra* note 63.

of . . . centrality in the area of international trade;”⁷⁶ Musa al-Majanni, “the son of an important Qayrawanese family”⁷⁷ who became a “very prominent man of affairs”;⁷⁸ and the Berekeyah family, who operated on a smaller commercial scale yet were central in the Maghribis’ communication network by virtue of the active role they played in Jewish communal affairs across the trading area.⁷⁹ These traders constituted a group that “appears to [have been] a tight party, despite the minor disputes that occasionally broke out among them.”⁸⁰

Awkal had connections to all three members of this group. He had extensive business dealings with the Taherti family.⁸¹ Majanni had trained as his apprentice and became his long-term agent and business partner.⁸² The two men were said to have enjoyed an extraordinarily “close personal relationship.”⁸³ Although Awkal did not trade with the Berekeyahs, they had an active, if sometimes contentious, correspondence concerning Jewish community affairs.⁸⁴

Awkal also had both family and business ties to Sicily.⁸⁵ His nephew lived on the island and often acted as his agent or his partner.⁸⁶ He also had

⁷⁶ GIL, *JEWS*, *supra* note 66, at 693; *see also* Stillman, *Merchant House*, *supra* note 28, at 20 (describing the Tahertis as a “great business house[.]”); Rustow, *supra* note 63 (“[T]he Tāhertīs were, in terms of volume of trade, one of the largest and most powerful mercantile operations of their era.”); Goitein, *Crusades*, *supra* note 69, at 56 (describing the Tahertis as “the most prominent of the approximately thirty merchant families from Kairouan [Quayran]”).

⁷⁷ Stillman, *Merchant House*, *supra* note 28, at 17.

⁷⁸ *Id.* at 25.

⁷⁹ Stillman, *Dissertation*, *supra* note 15, at 193–259 (providing letters that reveal the Berekeyahs’ role in Jewish communal affairs as well as their connection to Ibn Awkal).

⁸⁰ *See* GIL, *JEWS*, *supra* note 66, at 691, 696 (describing the ties of marriage and business between the Majjanis and Tahertis); *id.* at 691 (describing ties of marriage and business between the Majjanis and the Berekeyahs); *see also id.* at 688 (describing the ties of marriage and business between the Berekeyahs and the Tahertis); 1 GOITEIN, *SOCIETY*, *supra* note 41, at 181 (ties of marriage); Rustow, *supra* note 63 (“The Berekhiah brothers and the Tāhertīs collected the Qayrawan Jewish community’s donations to the Baghdad yeshivot and passed them on to Joseph ibn ‘Awkal or Ismā’īl ben Barhūn al-Tāhertī in Fustat . . .”); Stillman, *Dissertation*, *supra* note 15, at 82 (noting the ties among the Majjanis, the Berekeyahs, and the Tahertis).

⁸¹ Stillman, *Merchant House*, *supra* note 28, at 20 (“[T]he Tahertīs of Qayrawan . . . were . . . associates [and] sometimes rivals of the House of Ibn ‘Awkal.”).

⁸² Stillman, *Dissertation*, *supra* note 15, at 50, 79.

⁸³ *Id.* at 79.

⁸⁴ *See* Stillman, *Dissertation*, *supra* note 15, at 193–259 (providing translations of several letters from the Berekeyah brothers to Ibn Awkal relating to Jewish community concerns that revealed a close but difficult relationship between them).

⁸⁵ *See* Stillman, *Dissertation*, *supra* note 15, at 49–50 (naming the relatives of Ibn Awkal living in Sicily).

⁸⁶ His nephew was Isma’il b. Joseph b. Abi Uqba. SIMONSOHN, *supra* note 15, at xxi; *see also id.* at Letter #46 (where Uqba reports on one of his partnerships with Awkal).

a number of other agents,⁸⁷ including a long-term agent who enjoyed particularly high stature both in the community and with the authorities.⁸⁸ The Tahertis, too, had extensive business dealings in Sicily (including with Awkal's long-time agent),⁸⁹ and the Berekeyahs sometimes traveled there as well.⁹⁰ Together these ties created a triangle of connections along the Fustat–Sicily–Tunisian axis.

During the Awkal period, the flow of information among these locations was further facilitated by another, partially overlapping, set of ties created by the many overseas connections of the other wealthy Fustat-based trading family, the Tustaris. The Tustaris were “a prominent house of long-distance traders, bankers, courtiers, and scholars,”⁹¹ whose “mercantile correspondence demonstrates the value of their shipments to have been unequaled during this period.”⁹²

The Tustaris did business in Sicily and Tunisia,⁹³ and they had “[e]specially close”⁹⁴ commercial relations with the Tahertis “with whom they had extensive export-import business dealings.”⁹⁵ The Tustaris were further embedded in the Maghribi communication network by virtue of the central role they played in Jewish communal affairs. In this capacity, they corresponded with both the Berkekeyahs and the Tahertis⁹⁶ about the

⁸⁷ For others who acted as Awkal's partners and agents in Sicily, see *id.* at Letter #45 (from Abraham b. Simhon in Palermo to Awkal), and *id.* at Letter #33 (a letter to Awkal from Musa b. Isaq Hisda, an agent of his in Sicily, discussing a partnership between them as well as various tasks Hisda was to do as Awkal's agent).

⁸⁸ See GIL, JEWS, *supra* note 66, at 684 (noting that Ibn Awkal had a long-term agent and sometimes partner in Sicily named Abu Said Khalaf (Hayyim) b. Jacob Al-Andalusi, who was “highly praised by the Palermo community for his many merits,” and his intercessions with the Muslim government).

⁸⁹ GIL, JEWS, *supra* note 66, at 685 (noting that a Taherti was in contact with Awkal's agent Abu Said Khalaf (Hayyim) b. Jacob Al-Andalusi).

⁹⁰ *Id.* at 688 (noting that one of the Berekeyahs traveled as far as Sicily).

⁹¹ Marina Rustow, *Tustarī Family*, BRILL (2010), https://referenceworks-brillonline-com.turing.library.northwestern.edu/entries/encyclopedia-of-jews-in-the-islamic-world/tustari-family-SIM_0018910?s.num=0&s.f.s2_parent=s.f.book.encyclopedia-of-jews-in-the-islamic-world&s.q=tustari [https://perma.cc/J634-2SDQ].

⁹² *Id.*; 1 GOITEIN, SOCIETY, *supra* note 41, at 164 (“[T]he three senior Tustarī brothers['] . . . probity and success attracted even the attention of Muslim historiography . . .”); GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 176 (“[T]he Tustarī brothers [were] the wealthiest merchants of Egypt in their day.”).

⁹³ Rustow, *Tustarī Family*, *supra* note 91 (noting that the Tustaris had business connections in Sicily and Tunisia).

⁹⁴ See GIL, JEWS, *supra* note 66, at 696.

⁹⁵ *Id.* at 668; see also GOITEIN, LETTERS, *supra* note 15, Introduction to Letter #11 (revealing the unusually warm relationship between the Tustaris and the Tahertis and noting that the Tahertis report that they publicly sang the praises of the Tustaris for giving them help and that they “thanked God for this, my lord, in the presence of all those who know you and those who do not know you” (footnote omitted)).

⁹⁶ Stillman, Dissertation, *supra* note 15, at 45 (discussing the Tustaris' connections to the Berkekeyahs and Tahertis in relation to Jewish religious affairs).

transport of charity, books, and rabbinic writings throughout and beyond the Maghribi trading area.⁹⁷ The Tustaris also had business ties to Awkal.⁹⁸ The web of relationships formed by the Tustaris and their associates created an alternative, yet partly overlapping, pathway for information to flow in and out of Fustat from the main trading centers.

In sum, Ibn Awkal had connections to all of the most important Maghribi traders of his time; yet to fully understand his correspondence and his many and varied business ties, it is important to note that “[m]ost of Ibn ‘Awkal’s agents were . . . smaller, and not so small, merchants who provided services to [him] . . . not for any commission, but in order to request similar, reciprocal services from such an influential and well-connected business house.”⁹⁹

b. *The Nahray Generation*

Nahray Nissim was the most prominent merchant active in the second half of the century. “[H]is skill, his experience and especially his reputation for integrity made him a preferred associate of the most prominent Mediterranean merchants of his day.”¹⁰⁰ While Nahray was not nearly as wealthy as Awkal,¹⁰¹ he was considered the “most versatile [in terms of the variety of commercial activities he undertook] of all merchants known . . . from the Geniza.”¹⁰² Nahray was not only a trader but also a mediator,¹⁰³ banker,¹⁰⁴ “business agent, legal representative, and intercessor in public affairs for his Tunisian compatriots.”¹⁰⁵ Like Awkal, Nahray had business and family connections across the Fustat–Tunisia–Sicily trading area. These connections—together with those formed among his associates—created a triangular set of ties across the trading area that provided an enduring pathway for the flow of commercial information.

⁹⁷ GIL, *JEWS*, *supra* note 66, at 696.

⁹⁸ Stillman, *Merchant House*, *supra* note 28, at 18 (“[T]he Tustaris had business dealings with the house of Ibn ‘Awkal.”). Historians speculate that Awkal’s daughter married a Tustari. Stillman, *Dissertation*, *supra* note 15, at 51–52.

⁹⁹ Stillman, *Merchant House*, *supra* note 28, at 23.

¹⁰⁰ UDOVITCH, *NAHRAY LETTERS*, *supra* note 15, at 2; *see also* GIL, *JEWS*, *supra* note 66, at 711 (“Nehorai [Nahray] enjoyed great esteem and unusual distinction among the groups of merchants dealing in international trade, most of them Maghribis; he was knowledgeable and wise, diligent, assiduous and faithful.”).

¹⁰¹ GOLDBERG, *TRADE AND INSTITUTIONS*, *supra* note 10, at 45.

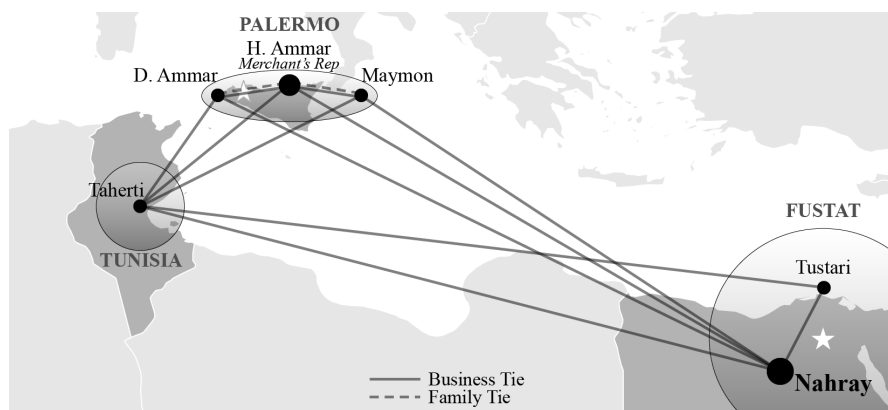
¹⁰² 1 GOITEIN, *SOCIETY*, *supra* note 41, at 156.

¹⁰³ SIMONSOHN, *supra* note 15, at Letter #96 (two large merchants ask Nahray to mediate a dispute).

¹⁰⁴ Goitein, *Crusades*, *supra* note 69, at 53 (describing Nahray as a “merchant banker, engaged in changing, money lending and other banking business”).

¹⁰⁵ 1 GOITEIN, *SOCIETY*, *supra* note 41, at 189.

FIGURE 2: TRADING TIES IN THE NAHRAY GENERATION



At the start of his career, Nahray apprenticed with his uncle, a powerful member of the Taherti family.¹⁰⁶ When he became a trader in his own right, he settled in Cairo but still “commuted between Tunisia and the eastern Mediterranean.”¹⁰⁷ Throughout his career, Nahray continued to trade and partner with members of the Taherti family,¹⁰⁸ and they often kept an eye on one another’s affairs.¹⁰⁹

Nahray¹¹⁰ and the Tahertis¹¹¹ both had strong trading ties to Sicily. On Sicily a small group of closely connected “prominent Palermitan Jewish merchants”¹¹² played a significant role in both their local market and in cross-Mediterranean trade. The most important member of this group was Hayyim b. Amar, a merchant with strong ties to government authorities. He was also the Merchants’ Representative, an important market functionary whose role

¹⁰⁶ *Id.* at 181 (noting that Nahray’s mother was a Taherti); *see also* GIL, JEWS, *supra* note 66, at 705.

¹⁰⁷ GOITEIN, LETTERS, *supra* note 15, at 145.

¹⁰⁸ SIMONSOHN, *supra* note 15, at Letter #150 (describing a partnership between a Taherti and Nahray); *id.* at Letter #81 (same); *id.* at Letter #146 (same); *id.* at Letter #117 (noting a shipment from a Taherti to Nahray); *id.* at Letter #135 (reporting on business affairs between Tahertis and Nahray); *id.* at Letter #180 (noting actions taken in relation to a partnership between a Taherti and Nahray).

¹⁰⁹ *Id.* at Letter #97 (where a Taherti describes some issues with goods belonging to Nahray and notes that “I stood surety for you”); *see also id.* at Letter #143 (where a Taherti describes many things he did for Nahray and observes that “I am acting for you over here as more than an agent”).

¹¹⁰ In addition to the connections discussed in the text, the letters contain references to other merchants Nahray dealt with in Sicily, *see, e.g.*, SIMONSOHN, *supra* note 15, at Letter #146 (noting that Nahray dealt with Judah b. Ismail al-Andalusi a Sicilian merchant); *id.* at Letter #96 (demonstrating that Nahray corresponded with Mevorakh b. Israel in Palermo), and make it clear that Nahray had relatives who resided there. *Id.* at Letter #88 (noting that Nahray had a “maternal uncle in Sicily”); *id.* at Letter #139 (discussing Nahray’s “instructions to his agents and partners in Sicily”).

¹¹¹ *See infra* notes 116, 122, 125–128; *see also* SIMONSOHN, *supra* note 15, at Introduction to Letter #64 (noting that the Tahertis had an agent in Sicily and planned to travel there).

¹¹² SIMONSOHN, *supra* note 15, at xxii.

is described further below.¹¹³ Hayyim's family and business-based connections to other local traders enhanced his local influence.¹¹⁴ His brother David was also a well-known merchant with direct commercial connections to both Nahray¹¹⁵ and the Tahertis.¹¹⁶ Another brother was a merchant who eventually became the Nagid—that is, the head of the local Jewish community.¹¹⁷ And his brother-in-law,¹¹⁸ Maymon b. Khalfa, was a prominent merchant in his own right,¹¹⁹ who provided Hayyim with a variety of services.¹²⁰

Nahray¹²¹ and the Tahertis¹²² both had business ties to Hayyim. One letter reveals that all three entered into a partnership together.¹²³ Nahray was also closely tied to Maymon, who was his long-term agent and sometimes partner.¹²⁴ The Tahertis, too, had business dealings¹²⁵ and a seemingly warm

¹¹³ In his capacity as Merchants' Representative, see *infra* text accompanying notes 131–151. Hayyim also played a key role in managing relations with Sicily's Muslim rulers. See, e.g., GIL, JEWS, *supra* note 66, at 573 (discussing a letter in which Hayyim claimed to intervene with the authorities to annul a decree against the foreign merchants).

¹¹⁴ See SIMONSOHN, *supra* note 15, at xxix (noting that the Ammars "were engaged in trade between Sicily, Egypt and North Africa" and "were either the most important merchant family of Sicily at the time, or among its most outstanding and active ones").

¹¹⁵ GIL, JEWS, *supra* note 66, at 588; see also SIMONSOHN, *supra* note 15, at Letter #154 (discussing trade in silk between David b. Ammar and Nahray); GIL, JEWS, *supra* note 66, at 588 (discussing relations between David b. Ammar and Nahray).

¹¹⁶ See SIMONSOHN, *supra* note 15, at Letter #143 (describing a transaction suggesting that a Taherti is acting as an agent of David (Daud) Ammar).

¹¹⁷ *Id.* at Letters #163 & #164 (mentioning "the appointment of Zakkār b. 'Ammār [who was also a merchant] as Nagid of Sicilian Jewry").

¹¹⁸ *Id.* at Letter #91.

¹¹⁹ See GIL, JEWS, *supra* note 66, at 587 (describing Maymon as "one of the most important merchants of the period").

¹²⁰ SIMONSOHN, *supra* note 15, at Letter #90 (revealing that Maymon carried purses and letters for Hayyim); *id.* at Letter #103 (noting that Maymon was a witness to one of Hayyim's deals and suggesting implicitly that he reported back to him).

¹²¹ *Id.* at Letter #140 (an account by Nahray mentioning a partnership with Hayyim); *id.* at Letter #143 (describing a partnership between Nahray and Hayyim).

¹²² GIL, JEWS, *supra* note 66, at 587 (noting that Hayyim had "close trade relations with Nehorai [Nahray] Nissim and the Tāhirtīs"); SIMONSOHN, *supra* note 15, at Introduction to Letter #144 (noting the existence of a partnership between Hayyim and a Taherti); *id.* at Letter #81 (mentioning tasks that a Taherti asked of Hayyim).

¹²³ See SIMONSOHN, *supra* note 15, at Letter #143 (mentioning a partnership among Nahray, Hayyim, and a Taherti).

¹²⁴ *Id.* (documenting that Maymon was Nahray's agent); *id.* at Letter #140 (describing a deal between Maymon and Nahray); *id.* at Letter #70 (revealing that Maymon carried a purse of coins for Nahray); *id.* at Letter #81 (mentioning accounts between Maymon and Nahray).

¹²⁵ See, e.g., *id.* at Letter #143 (mentioning a business deal between the Tahertis and Maymon).

personal connection to Maymon.¹²⁶ During this era, the Tahertis maintained their connection to the Tustaris (who seem to have traded with Hayyim, too¹²⁷) and helped Nahray create business and communal ties with them as well.¹²⁸

Nahray was also widely renowned for his religious knowledge. Like Awkal, he played a central role in the communal and charitable affairs of the Jewish communities throughout the trading area.¹²⁹ The ties created by these activities further enhanced his ability to both obtain and transmit reputation-relevant information not only within Fustat, but also throughout and beyond the Fustat–Sicily–Tunisia axis.¹³⁰

In sum, during both the Awkal and Nahray generations, the connections these large traders had within their local trading centers—coupled with the ties they maintained with one another across the main trading centers—put them in an ideal position to obtain and spread information about traders’ reputation-relevant activities, prices, and other aspects of the market throughout (and sometimes beyond) the Fustat–Sicily–Tunisia trading area. The overall structure of these ties created a semi-closed network across the trading area which transmitted information well enough for reputation to play a central role in supporting trade.

C. *Quasi-Institutional Ties*

The flow of information within and across markets also appears to have been facilitated by institutional functionary known as the “Merchants’ Representative.”¹³¹ The Merchants’ Representative was a stationary merchant who could be found in both major trading centers¹³² and small

¹²⁶ *Id.* at Letter #149 (where, after learning of a shipwreck, a Taherti notes that “I am worried over our men who had been on board. . . . My greatest pain is in regard to Maymūn . . . I hope that he himself is safe”).

¹²⁷ See *id.* at Letter #149 (discussing a transaction involving a Taherti, a Tustari, and Hayyim).

¹²⁸ GIL, JEWS, *supra* note 66, at 705 (noting that Nahray’s uncle, a Taherti, helped him forge ties with the Tustaris).

¹²⁹ For an overview of these activities, see *id.* at 715–21.

¹³⁰ SIMONSOHN, *supra* note 15, at Letter #62.

¹³¹ 1 GOITEIN, SOCIETY, *supra* note 41, at 186–92 (providing an overview of the role of the Merchants’ Representative and suggesting that “[t]he gap left by informal cooperation was filled by the professional representative of the merchants”). Another functionary who would also have been well-positioned to transmit the type of information that would have facilitated reputation-based trade within local trading centers was the *dallal*. A *dallal* acted as a “broker, auctioneer, or middleman He cried out the goods offered for sale in the bazaar and brought them to the knowledge of customers in other ways.” GOITEIN, LETTERS, *supra* note 15, at 14.

¹³² Some major trading centers, including Fustat, had more than one Wakil. See Goitein, *Crusades*, *supra* note 69, at 61.

“provincial towns.”¹³³ He was typically “a successful merchant of means who himself had come from a foreign country or was the son of such a person, but who had lived long enough in his new domicile to become well entrenched there and influential.”¹³⁴

Within his local market, the Merchants’ Representative provided “organization and oversight for the community he served,”¹³⁵ much like a modern trade association. His warehouse functioned as “a neutral meeting ground for the merchants, [and] it served them also as a bourse.”¹³⁶ He would “organize auctions” and arrange for notaries to be present when goods arrived or were exchanged so that traders could “register and settle contracts.”¹³⁷ He would “even negotiate goods through customs.”¹³⁸

He also played the role of post office, receiving, storing, distributing, and sometimes copying the mail.¹³⁹ This gave him valuable information about who was dealing with whom,¹⁴⁰ and, perhaps more importantly, who had ceased to communicate with a former trading partner. The letters reveal that failure of a business partner to communicate by letter or any significant delay in communication made traders anxious. They took it as a signal that the silent trader was displeased by his agent or partner’s actions.¹⁴¹

The Merchants’ Representative also “offered a variety of commercial services to foreign merchants for a fee,”¹⁴² including acting as a sales broker for goods arriving from overseas.¹⁴³ He would sometimes act as a third party in overseas partnerships, receiving, selling, and collecting payment for goods

¹³³ 1 GOITEIN, SOCIETY, *supra* note 41, at 190.

¹³⁴ *Id.* at 192. Merchants’ Representatives “differed widely with regard to the power and influence they wielded.” *Id.* at 191.

¹³⁵ GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 111.

¹³⁶ 1 GOITEIN, SOCIETY, *supra* note 41, at 188.

¹³⁷ GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 112, 168.

¹³⁸ *Id.* at 112.

¹³⁹ *Id.* at 65, 112.

¹⁴⁰ *Id.* at 87 (noting that the arrival of a letter “seems to have been a primary indicator to merchants themselves . . . that two men had a functioning association, a *suhba*”).

¹⁴¹ See GOITEIN, LETTERS, *supra* note 15, at Letter #12 (“Letters from you should arrive here all the time to keep us assured of your welfare. For we are disquieted until we receive letters telling us how you have been and how you are.”); see also *infra* notes 167–169 (giving examples of how traders reacted when Awkal or Nahray were slow in responding to letters).

¹⁴² GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 112.

¹⁴³ Partners sometimes gave their goods to a Wakil to sell, presumably to ensure that a proper price was received. See 1 GOITEIN, SOCIETY, *supra* note 41, at 187–88 (“When a participant in a partnership went abroad, he would not (or not in all cases) send the goods purchased there to the store of his partner, but to a wakil [that is, a Merchants’ Representative], who would either store or sell them The money thus obtained could be left with him as well.”).

on behalf of the partnership. He also acted as an “agent of last resort”¹⁴⁴ for foreign merchants, engaging in a wide variety of tasks, including ensuring the delivery of arriving goods to the receiving agent’s place of business.¹⁴⁵ It was not uncommon for foreign merchants to appoint him (via a power of attorney) as their legal representative to aid in their debt collection efforts.¹⁴⁶ In addition, he sometimes acted as a “neutral arbiter” when disputes arose.¹⁴⁷ The Merchants’ Representative’s many roles put him in a good position to collect information about the creditworthiness and trustworthiness of many local and overseas traders as well as information about prices and market conditions both in his location and in other trading centers.¹⁴⁸

The Merchants’ Representative had an incentive not only to aggregate information but also to do so accurately. His stature both within his local community and with the local ruling government was highly dependent on his ability to attract business from overseas merchants.¹⁴⁹ Overseas merchants would only trade in a market if they could access reliable reputation-related information and could trust their agents there not to cheat. A Merchants’ Representative who wanted to retain his advantaged position therefore had an incentive to ensure the accuracy of the market news and the information about merchant behavior that he transmitted both within and across trading centers.¹⁵⁰

Given their position in their local trading area, the commonly accepted qualifications for the job, the many roles they played in facilitating and intermediating trade, as well as their connections to the trading networks of the most important traders like Awkal and Nahray,¹⁵¹ the Merchants’

¹⁴⁴ GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 112; *see also* GOITEIN, LETTERS, *supra* note 15, at 14–15 (noting that a key function “of the representative of the merchants was essentially the protection of the interests of persons who were absent from a town or were foreigners there”).

¹⁴⁵ GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 112.

¹⁴⁶ 1 GOITEIN, SOCIETY, *supra* note 41, at 187.

¹⁴⁷ *Id.*

¹⁴⁸ GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 180 (noting that a Merchants’ Representative tended to be “informed of the movement of goods, their ownership, their storing, and the agency plans of members of their group, the ashābunā,” that is, the Maghribi Traders).

¹⁴⁹ *Id.* at 169.

¹⁵⁰ Two aspects of the market likely enhanced the accuracy of the information transmitted by the Merchants’ Representative. First, some trading centers had more than one Merchants’ Representative. 1 GOITEIN, SOCIETY, *supra* note 41, at 19; GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 111. This would have created competition among them to attract business by providing the most accurate information and would have deterred the deliberate transmission of inaccurate information given the enhanced risk that it would be detected. Second, the information provided by a Merchants’ Representative was much less likely than the gossip circulating informally through a market to be distorted by the force of echo since the Merchants’ Representative was well-positioned to acquire information from his own direct observations.

¹⁵¹ GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 139.

Representatives were perfectly positioned to play the role of network broker. They were trusted in both their home market and foreign markets and could therefore “clear” sticky information about transactors’ reputations across different trading centers,¹⁵² thereby contributing, as discussed in Part II, to the ability of a system of multilateral reputation-based sanctions to effectively support trade.

D. The Importance of a Trader and His Agent’s Position in the Network

The Maghribi had an intuitive understanding of the importance of a trader’s position in the relevant network of traders. They even had a special word for it: *jah*. A trader’s *jah* was a measure of his “pull” and personal connections. “The primary semantic range of *jāh* as reputation includes ‘social rank’, ‘standing’, and ‘prestige,’” as well as “the breadth and strength of a merchant’s personal ties” to other merchants.¹⁵³ A trader’s *jah* determined his access to both information and markets. It therefore strongly influenced the value and type of services he could provide to his trading partners. As one of Ibn Awkal’s agents noted in explaining why he wished to continue their relationship despite its many tensions, “[I]t is my desire to avail myself of your *jah* for those things I send you.”¹⁵⁴

A trader’s *jah* also determined his ability to transmit information to other traders and markets. It therefore affected the magnitude of the reputational sanction he could impose on his trading partners. In network terminology, *jah* is a rough approximation of network centrality. Centrality is a network metric that can be used to understand where reputation-based constraints are likely to be stronger or weaker within a network. A trader who is central in a network has “a large number of connections to [traders], which, in turn, are each linked to many other [traders].”¹⁵⁵ The governance value of centrality “lies in the ability of [a] centrally positioned [trader] to reduce incentive conflicts after the contract has been initiated by threatening (implicitly) to sanction opportunistic behavior,”¹⁵⁶ by transmitting negative information to his other connections (and indirectly some of their

¹⁵² See BURT, *supra* note 32, at 11–28 (discussing the role of a network broker).

¹⁵³ Goldberg, *Business Relationships*, *supra* note 1, at 34. *Jah* was also important for non-reputational reasons, as a trader with more *jah* could likely provide a wider range of services and contacts than a trader with less *jah*.

¹⁵⁴ GOLDBERG, *TRADE AND INSTITUTIONS*, *supra* note 10, at 174 (internal quotation marks omitted).

¹⁵⁵ David T. Robinson & Toby E. Stuart, *Network Effects in the Governance of Strategic Alliances*, 23 J.L. ECON. & ORG. 242, 249 (2006). For an overview of the most important measures of network centrality, see MATTHEW O. JACKSON, *SOCIAL AND ECONOMIC NETWORKS* 37–43 (2008) (Section 2.2.4: Centrality).

¹⁵⁶ Robinson & Stuart, *supra* note 155, at 249.

connections as well).¹⁵⁷ The more *jah* a merchant had, the larger the sanction he could impose (holding constant the *jah* of his agent or partner) on his business associates if they misbehaved.¹⁵⁸

The letters reveal that traders with a great deal of *jah* were able to damage the reputation of traders who wronged them. This can be seen in the correspondence of Ibn Awkal. Awkal was the best-connected merchant in the most central trading center (Fustat) and had more *jah* than any trader in his generation. The extent of the reputational harm he could impose on an agent is reflected in a letter where a merchant, whose reputation was badly

¹⁵⁷ The effect of centrality on contract governance has been empirically demonstrated. Studies show that central transactors tend to forgo contract bonding and governance protections that peripheral traders routinely include in their agreements. This suggests that the connections arising from network position play a substantially equivalent bonding role in these transactions. A contemporary illustration of the relationship between network centrality and network governance comes from a study of 38,000 research and development alliances between large pharmaceutical companies and small biotech startups. *See id.* at 242. The study found that the more central the big pharmaceutical company was in the network of such firms, the less likely it was to take an equity stake (a common governance provision in such agreements) in the biotech firm. It also found that when the pharmaceutical company did take an equity stake, the size of the stake went down as the centrality of either the pharmaceutical company or the biotech increased. These findings suggest that in these alliances, the governance force generated by network centrality and equity stakes may be at least partial substitutes.

Another study of a large interfirm network looked at ties arising from 22,039 information technology (IT) outsourcing agreements entered into from 1989 to 2008. *See* Kiron Ravindran, Anjana Susarla, Deepa Mani & Vijay Gurbaxani, *Social Capital and Contract Duration in Buyer-Supplier Networks for Information Technology Outsourcing*, 26 INFO. SYS. RES. 379 (2015). The study explored whether there was any connection between either clients' or vendors' network position and the stated term-length of the transaction. Given the many aspects of an IT transaction that are non-contractible and the vulnerable position of the client (who, a few months or years into the agreement might have little in-house IT capacity remaining), contractual length is a reasonable proxy for transactors' (most importantly clients') faith that the governance devices employed could adequately bond the transaction, with longer contract terms indicating a higher level of trust. The study found a statistically significant positive association between how central vendors and clients were in the overall network of firms and the length of their contracts, but noted that the client's centrality had a far larger impact on term-length than the vendor's centrality. *Id.* at 393. The study concluded that network governance was an important force in the global market for IT outsourcing, explaining that the "network functions as a conduit of reputation . . . [and] plays a role in ensuring that contractual obligations are self-enforcing . . . [by] providing a mechanism for community enforcement . . . [and] prevent[ing] the potential for opportunism." *Id.* at 395.

For examples of additional studies exploring the connection between network position and contract governance, see, for example, Gerrit Rooks, Werner Raub, Robert Selten & Frits Tazelaar, *How Inter-Firm Co-operation Depends on Social Embeddedness: A Vignette Study*, 43 ACTA SOCIOLOGICA 123 (2000); Gerrit Rooks, Werner Raub & Frits Tazelaar, *Ex Post Problems in Buyer-Supplier Transactions: Effects of Transaction Characteristics, Social Embeddedness, and Contractual Governance*, 10 J. MGMT. GOV. 239, 253 (2006); and Lisa Bernstein, *Beyond Relational Contracts: Social Capital and Network Governance in Procurement Contracts*, 7 J. LEGAL ANALYSIS 561 (2015) (qualitative study of network governance in contracts between original equipment manufacturers and their suppliers of component parts in the American Midwest).

¹⁵⁸ The credibility of a merchant's threat to impose a reputational sanction, like terminating dealings, would increase as the number of agents (with similar sets of connections) that he had in the misbehaving agent's location increased, since the *jah* he would lose from terminating the agent would be smaller.

damaged by an action Awkal took in response to the agent's perceived misdeeds, complains to Awkal that as a result of his actions "letters filled with condemnation have [now] reached everyone. My reputation is being ruined."¹⁵⁹

Merchants appeared to have been aware of Awkal's ability to sanction them. They sometimes willingly absorbed a loss or took additional precautions simply to avoid the risk of his disapproval.¹⁶⁰ Even Awkal's nephew-agent in Palermo was afraid of displeasing him. After losing money on some bales of flax that he handled as his uncle's agent, the nephew transferred some profit he earned on his own account into a separate partnership he had with his uncle, even though he was not required to do so. As he explained, "[t]he pepper was included into the jointly-held merchandise in order to offset the loss on the flax, and the silk was included in the partnership against the loss from the torn bales."¹⁶¹

Merchants also took losses to avoid displeasing Nahray Nissim.¹⁶² Like Awkal, Nahray had more *jah* than any trader of his generation. As one agent, who had incurred a large loss on a purchase of wheat for Nahray, emphasized when reporting to him on the status of his goods, "I will not inflict any loss on you nor will I charge anything against your account."¹⁶³ Given the reputational harm larger traders could inflict and the difficulty of sorting out responsibility given the many things beyond traders' control that could disrupt ordinary transactions, it was not uncommon for their agents to plan to overperform to avoid providing any grounds for suspicion of shirking. As one of Nahray's agents explained, "I am doing even more than you asked me to with respect to the olive-oil, the soap and the other items."¹⁶⁴

¹⁵⁹ Stillman, Dissertation, *supra* note 15, at 270; *see also infra* note 180 (describing various steps that the agent took to assuage Awkal's anger).

¹⁶⁰ For example, when one of Awkal's agents received a letter from Awkal suggesting that he had not followed Awkal's instructions and had made a profit at Awkal's expense, the agent took steps to attempt to protect his reputation. First, he ensured that the next action he took on Awkal's behalf—packing bales of flax—was witnessed. He then asked the witnesses to write up their observations and he included their letters with the bales of flax. Second, the agent assured Awkal that he would not suffer a loss on the deal, noting that "[i]t is not within me that I would make any profit which would come to me from this if /you/ yourself would not be pleased. I would not wish such a thing." Stillman, Dissertation, *supra* note 15, at 366 (a letter from Musa b. Ishaq b. Hisda to Ibn Awkal).

¹⁶¹ *See id.* at 387, 394 (a letter from Awkal's nephew to Awkal).

¹⁶² The fear of a larger trader's ability to impose reputational harms appears to have been justified as Nahray did write reputation-damaging letters to third parties, including associates of his agents. *See* SIMONSOHN, *supra* note 15, at Letter #108 (where an upset Salma b. Musa told Nahray that "Cohen told me things and let me read your letter, sir, and grieved me," after which Salma demanded, "You must tell me to my face, sir, when you have a complaint, and I shall yield to you, as long as there are relations of reciprocity between us").

¹⁶³ *See* UDOVITCH, NAHRAY LETTERS, *supra* note 15, at Letter #8.

¹⁶⁴ *See id.* at Letter #5.

How exactly a very central trader's own *jah* (rather than the *jah* of his trading partner) influenced his own propensity to behave when acting as a partner or an agent is a complex question that has not yet been adequately answered by network theorists. It would likely depend on the relative *jah* of both parties, the relative importance of each of their markets, and the number and strength of the connections between their markets.

In some contexts, central transactors can be strongly disciplined by network governance. The more central a transactor is in a network, the more visible their actions will be to others, and the quicker any wrongdoing they do engage in is likely to become known through the network.¹⁶⁵ Conversely, central transactors will often have so much status and reputation that a small peripheral party may not be able to meaningfully damage the reputation of a central transactor, especially if that transactor generally behaves acceptably. In addition, the loss to a small trader's *jah* from terminating a relationship with a central trader may well have been so significant that smaller traders might often have been better off maintaining somewhat problematic ongoing relationships with large well-connected traders, even if it meant accepting occasional losses. Given these considerations, it would likely have been very difficult for small merchants (especially those located far from Fustat) to use gossip to damage the reputations of central traders like Ibn Awkal or Nahray Nissim in the event they misbehaved.¹⁶⁶

The letters reveal that the largest merchants were not, as a general matter, perfectly disciplined by reputational concerns—they are replete with hints and occasional outright accusations demonstrating that the behavior of these merchants was not always above reproach. The letters indicate that

¹⁶⁵ For example, if a firm like Nike is found to use a subcontractor who permits child labor in their factory, the impact on Nike is likely to be far greater than it would be if a similar thing happened to a no-name generic company.

¹⁶⁶ If, however, a large central trader engaged in serious misbehavior, his agent might not have been wholly without recourse. If a small peripheral trader wanted to damage the reputation of a central trader in Fustat, he could have travelled to Fustat or appointed a representative to make a claim on his behalf in front of the partially merchant-staffed mediation panel that was run adjunct to the Jewish court system. If the mediators made a suggested settlement in the small merchant's favor, the larger merchant would be likely to comply since the respect accorded the panel meant that his own reputation might well have been hurt by noncompliance. Historians disagree about how often this route was chosen. For an argument that it was common and an overview of how it worked, see generally PHILLIP I. ACKERMAN-LIEBERMAN, *THE BUSINESS OF IDENTITY: JEWS, MUSLIMS, AND ECONOMIC LIFE IN MEDIEVAL EGYPT* (2014).

both Awkal¹⁶⁷ and Nahray¹⁶⁸ were slow correspondents (even when they were not angry at their agents), and were sometimes either negligent or quite slow in taking care of the affairs of their agents.¹⁶⁹ Awkal in particular was known to be a very difficult man to deal with.¹⁷⁰

Yet the faults of Awkal and Nahray were usually pointed out politely and indirectly.¹⁷¹ Complaints were often accompanied by suggested excuses, so that difficulties could be resolved with no express acknowledgement of

¹⁶⁷ For examples of Awkal's slow response to letters, see GOITEIN, *LETTERS*, *supra* note 15, at Letter #14 (where an agent of Awkal's with whom relations appeared to be smooth writes, "I have written you a letter before, but have seen no answer. Happy preoccupations—I hope. . . . I have no doubt that you have sent me a letter containing all the quotations"), and SIMONSOHN, *supra* note 15, at Letter #34 (where one of Ibn Awkal's trading partners mentions another merchant who "had no letter from you [Ibn] on any of these boats and reprimanded me for the disregard").

¹⁶⁸ For examples of Nahray's slow response to letters, see SIMONSOHN, *supra* note 15, at Letter #98 (noting that Nahray failed to respond to two letters and has also "failed to write . . . about the arrival of the mats"); *id.* at Letter #92 ("Cohen is sending you his regards. He wrote you [Nahray] several letters, but had no reply."); *id.* at Letter #97 (a Taherti notes that he had urged Nahray to write certain letters, but he did not); *id.* at Letter #129 ("I have not heard from you [Nahray] for a long time. May the Lord keep you busy with good things . . ."); *id.* at Letter #154 (where the brother of the Merchants' Representative of Sicily writes to Nahray, "(I hope) everything will turn out well, and that you will treat us as we expect and act for us in this matter (we wrote) but had no reply"); UDOVITCH, *NAHRAY LETTERS*, *supra* note 15, at Letter #11 ("I am weary of having to remind you to send me the remainder, and not receiving any reply from you. . . . You must answer this letter of mine."); *id.* at Letter #14 ("I inform you my lord [Nahray] that since the day I left you I have not received any letter from you."); and *id.* at Letter #17 ("I have not received any letter from you [Nahray] nor have I received any instructions . . . I have been distressed on this account . . .").

¹⁶⁹ See, e.g., SIMONSOHN, *supra* note 15, at Letter #109 (where Nahray's long-term agent Maymon accuses him of trying to avoid notifying him of a loss and of not working all that hard, saying, "I know that it is your habit and in your nature to take care of people's needs. So I (can only) conclude: This is my luck and fate and you are not to blame"); *id.* at Letter #142 (where an agent of Nahray's implores him to send some goods and an invoice to someone, emphasizing that "[t]his is my main request of you and then I shall leave you alone 'on land and on sea.' Do not look for excuses because I shall not accept any."); *id.* at Letter #88 (where an agent notes that he has sent Nahray many requests relating to actions he wanted him to take with respect to his goods, but did not get any reply); *id.* at Letter #153 (suggesting that Nahray had not taken the proper steps to sell the agent's mascara, noting "I read what you wrote with reference to the mascara. I am surprised. I asked you for a whole year to do me a favour in regard to this mascara. In every letter to me you wrote: the mascara has not yet been sold. I do not know what business I have with this mascara and I do not know what you mean," and also mentioning that others were upset with Nahray, noting that someone told him that "[o]ur friend R. Nehorai [Nahray] did not act in a manner fitting the way in which he should treat people like us"); *id.* at Letter #156 (where an important agent of Nahray's in Sicily writes, "I hope you sold the *Tustari* (cloth). Pay attention!"); see also GIL, *JEWS*, *supra* note 66, at 706 (quoting a letter from a Taherti to Nahray saying "my brother, you know how much love I have for you and your standing with me; yet if there be sloppiness in the purchases that I need, I will arrange for my brother . . . to come or I will come myself" (internal quotation marks omitted)).

¹⁷⁰ As Awkal's biographer noted, "[I]t would appear both from his business and communal correspondence that Joseph b. Awkal was at times a difficult man to deal with." Stillman, *Dissertation*, *supra* note 15, at 64.

¹⁷¹ See, e.g., SIMONSOHN, *supra* note 15, at Letter #129 (writing to Nahray, "I have not heard from you for a long time. May the Lord keep you busy with good things . . .").

wrongdoing. As one of Nahray's agents put it in a letter that pointed out that Nahray had not done what he was supposed to do, "I (can only) conclude: This is my luck and fate and you are not to blame."¹⁷² On rare occasions, these points were made more directly. As a merchant said to Nahray to encourage him to deal with his business promptly, "This is my main request of you and then I shall leave you alone 'on land and on sea.' Do not look for excuses because I shall not accept any."¹⁷³ And, as one of the Tahertis cautioned him, "Send me quickly all you bought, do not be negligent . . ."¹⁷⁴ But even when traders (both large and small) expressed extreme upset at the actions of a trader like Awkal or Nahray, they tended to indicate their desire to continue their commercial relationship.¹⁷⁵

E. Methodological Caution

Recognizing the difficulty a small trader would have faced in attempting to sanction a large central trader—like Awkal, Nissim, or a Taherti—suggests that caution is warranted in drawing definitive *empirical* conclusions about the effectiveness of private ordering across the trading area as a whole on the basis of the Geniza letters. The network approach—by highlighting the importance of a trader and his agent's respective positions in the network to predicting how well reputation-based network governance is likely to have constrained their behavior—reveals a bias in the Geniza letters which suggests that they may provide an overly optimistic account of the effectiveness of this governance mechanism across the Maghribi trading area as a whole.¹⁷⁶

Eighty-five percent of the letters in the Geniza were received by Awkal,¹⁷⁷ Nissim, or other Fustat-based traders they dealt with directly. This is significant because smaller traders located outside of Egypt dealing with

¹⁷² *Id.* at Letter #109.

¹⁷³ *Id.* at Letter #142.

¹⁷⁴ *Id.* at Letter #143.

¹⁷⁵ The idea that the network was less successful in constraining the actions of the largest traders is further supported by the historians' observation that "[t]he more important a person was the more difficult it was to enforce payment." 1 GOITEIN, *SOCIETY*, *supra* note 41, at 258.

¹⁷⁶ Historians differ on their view of the representativeness of the Geniza documents. SIMONSOHN, *supra* note 15, at xiii ("There is no way of telling whether [the Geniza documents] are truly representative or not, and if they do contain a bias, how they deviate from the norm."); Greif, *Early Trade*, *supra* note 1, at 526 ("[I]t is reasonable to conjecture that the documents found in the *geniza* contain a representative sample of their [the traders'] commercial correspondence."); *see also* GOLDBERG, *TRADE AND INSTITUTIONS*, *supra* note 10, at 200–01 (noting that 95% of the Geniza letters were sent to Egypt, but concluding that "[t]he degree to which this distorts our picture is debatable").

¹⁷⁷ GOLDBERG, *TRADE AND INSTITUTIONS*, *supra* note 10, at 200; Stillman, *Merchant House*, *supra* note 28, at 22 (noting that although many letters that were sent to Awkal were preserved in the Geniza, "no letters from the House of Ibn 'Awkal have been preserved").

these central Fustat merchants or those closely connected to them would have been the Maghribi traders who were least likely to misbehave when acting as agents for these important Fustat traders.¹⁷⁸ After all, these large Fustat-based traders were so central in both their local areas and in the trading network as a whole that they (or their direct associates whose correspondence also appears in the Geniza) could easily have destroyed the reputation of any average-size agents who decided to cheat them, something that would have been harder and more costly for two less central (or two very central¹⁷⁹) transactors to do to one another. It is certainly possible that the structure of ties among smaller and/or less central traders engaged in either local or long-distance trade, might have made it possible for network governance to have constrained wrongdoing among them. All of the preconditions necessary for reputation to have played a core role in governing trade appear to have been present; yet given the limits of the Geniza documents, it is impossible to definitively establish that reputation was in fact successful in doing so.

In thinking about the importance of this bias for understanding the way reputation-based network governance operated among the Maghribi traders, it is notable that the five letters that Greif and his historian critics look to in their longstanding debates over the existence of the traders' coalition and the power of reputational sanctions all involve sanctions imposed by a large merchant and/or a merchant who occupied a central role in the flow of information.¹⁸⁰

¹⁷⁸ See GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 87 ("It is telling that such missives [from the West that arrived in Alexandria and were forwarded to Fustat were] from merchants whose dealings were on a smaller scale than those of the recipients, who were more important.").

¹⁷⁹ Consider, for example, a problem that arose between Ibn Awkal and the Tahertis. Awkal had sent a shipment of silver to Tunisia and asked the Tahertis to send it to be sold in Spain, where he thought it would get a better price. The Tahertis ignored these instructions and instead melted down the silver for their own purposes. The families continued to deal with one another for the next four years despite this incident.

¹⁸⁰ The two letters that Greif puts forth as the best "direct documentary evidence" of "the implicit contract within the coalition" both involve reputational harm that was or might have been imposed by a large trader—Ibn Awkal, the "merchant prince" in the first letter, and the Merchants' Representative of Sicily, Hayyim b. Ammar, and Nahray in the second. Greif, *Reputation and Coalitions*, *supra* note 1, at 868.

The first letter was written to Ibn Awkal by Samhun b. Da'ud, one of his Tunisian-based trading partners. GOITEIN, LETTERS, *supra* note 15, at Letter #1. The letter describes the reputational harm Samhun suffered when Awkal, thinking that Samhun had done him wrong, "withheld payment" from Samhun's creditors in Fustat without communicating to them Samhun's willingness to pay. Samhun notes that as a result "letters vituperating me have now come here to everyone and my honor has been disgraced." Another part of the same letter reveals that Samhun (like Awkal's other agents) feared Awkal's ability to damage his reputation. In response to Awkal's claim (made in an earlier letter) that he had dealt improperly with a load of Brazilwood, Samhun emphasizes that he very much needs Awkal's help in business and that he "did not take it [the Brazilwood] for myself, nor have I made any profit from

it. Rather, it caused me losses.” Samhun also indicates that he took a further loss on a load of silk, even paying a debt of Awkal’s with his own money because “of my esteem for you and because of your illustrious position.” This letter suggests that some of Awkal’s partners overperformed their contracts, perhaps out of fear of the reputational harm he could impose if he were displeased. Just as witnessing could protect a trader from false claims of nonperformance or underperformance, so too could protecting one’s principal from a loss, or giving one’s partner a greater share of profit than due him, since the premium might remove concerns relating to underperformance.

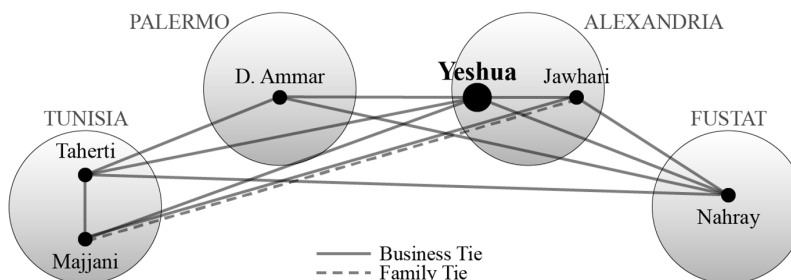
The second letter, dated 1055, was from Avon B. Sadaqa to Hayyim b. Ammar, the Merchants’ Representative of Sicily. Hayyim had received a letter from an unidentified person telling him that Avon, who lived in Jerusalem, had done something wrong (exactly what is a matter of dispute among historians, *see* GOLDBERG, *TRADE AND INSTITUTIONS*, *supra* note 10, at 87 n.85), and Hayyim responded by telling Avon that he was “ashamed” to have received letters from him. Avon responded to Hayyim noting that he had been widely yet unjustifiably excoriated for his action. *See* SIMONSOHN, *supra* note 15, at Letter #105. He implored Hayyim to ignore the tales of his alleged wrongdoing and to refrain from further “spread[ing] the current slanders,” and hurting him through “clever behaviour and conduct.” *Id.* Avon had expected Hayyim to stand up for him, perhaps because before moving to Jerusalem Avon’s family had spent time in Palermo. *See* UDOVITCH, *NAHRAY LETTERS*, *supra* note 15, at 5. As Avon explained, “It was your duty—because you know me and in view of the friendship and the partnership that used to exist between us . . . to believe in my innocence and not to spread the current slanders.” SIMONSOHN, *supra* note 15, at Letter #105; *see also* GIL, *JEWS*, *supra* note 66, at 587 (noting that Avon had “close trade relations” with Hayyim). Avon also expressed agitation that Nahray was not responding to his letters, surmising that he “does not want to risk the condemnation” that might result from revealing their association. SIMONSOHN, *supra* note 15, at Letter #105. Avon notes that even if Nahray does not reply to his letters, he wants him to read them to hear his side. Again, neither Hayyim nor Nahray were harmed directly by Avon’s activities, yet it is his reputation with these large traders in particular that seems to concern Avon. Interestingly, Avon continued to deal with Hayyim and Nahray. *See* SIMONSOHN, *supra* note 15, at Letter #126 (a letter from Abun [Avon] to Nahray written in 1059, four years after the events in question). And subsequent to these events, Avon took care of an ailing relative of Nahray’s in Jerusalem. UDOVITCH, *NAHRAY LETTERS*, *supra* note 15. Similarly, Avon continued to correspond with Hayyim b. Ammar, *see* SIMONSOHN, *supra* note 15, at Letter #126 (a letter written in 1059, from Abun to Nahray, enclosing a letter to Hayyim b. Ammar and asking Nahray to forward it).

The three additional letters that Greif offers as “indirect” evidence of the coalition are also ones in which the person imposing the sanction or whose condemnation is feared is an important trader and/or occupies a position of centrality in the network.

In one letter, Maymon b. Khalfa in Palermo writes to his trading partner and long-time *suhba* partner Nahray, coming to the defense of another Palmaterian trader who Nahray evidently thought had wronged him. *See* SIMONSOHN, *supra* note 15, at Letter #109. Maymon pleads with Nahray not to damage the trader’s reputation, saying, “As you know he is our agent and this (affair) worries all of us,” and noting that it was another of Nahray’s partners who was to blame for the difficulties. The letter makes clear that Maymon believed that Nahray had the ability to impose severe reputational harm, but also indicates that if he did so against an innocent trader, the trader’s local compatriots might well stand up for him. Although Maymon’s rebuke to Nahray was quite direct, this might have been possible because Maymon was “one of the most important merchants of the period,” GIL, *JEWS*, *supra* note 66, at 587, and because he and Nahray had a long-term *suhba*. In addition, Maymon was the brother-in-law of the Merchants’ Representative of Palermo, and as discussed above, *supra* notes 149–150 and accompanying text, Merchants’ Representatives were very concerned with maintaining the reputations of local traders, since the aggregate reputation of a market had a strong effect on the willingness of overseas merchants to do business there, and a Merchants’ Representative’s standing with the local authorities depended on how well he upheld the reputation of the marketplace.

The final two examples involve merchants who occupy central places in the network, a network position that, as discussed above, *see supra* text accompanying notes 155–157, should give them the ability to impose, threaten to impose, or attempt to remediate reputational harm. Consider first the

exchange of letters between Khalluf b. Musa, a substantial merchant in Palermo, and Yeshua b. Ismail in Alexandria. See GOITEIN, LETTERS, *supra* note 15, at Letters #23 & #24. Yeshua was not a notably big trader, but was very well-connected within the Maghribi network and has been described as an “up-and-coming” trader. GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 120. He was an agent of Musa Majjani, a very large merchant in Tunisia, see GOITEIN, LETTERS, *supra* note 15, at 119; he had extensive ties to Nahray and had a *suhba* with him that lasted forty years, see GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 131. He had connections to the Merchants’ Representative of Sicily, see SIMONSOHN, *supra* note 15, at Letters #144 & #149, was related to, GOITEIN, LETTERS, *supra* note 15, at 120, and did business with the Tahertis, *id.* at Letter #106 (discussing business with the Tahertis); *id.* at Letter #143 (discussing a partnership with the Tahertis). His ties are pictured below:



In his letter, Khalluf responds to two accusations of wrongdoing. First, he responds to a claim that he sold Yeshua’s goods and kept the money for himself. In response, he notes that he “showed your letter to people and then showed them the blessed goods you had here with me” and that he “took out all your goods in the presence of a number of our friends and delivered them to Tammām . . . so that you should be reassured.” GOITEIN, LETTERS, *supra* note 15, at Letter #23. Second, seemingly in response to a claim that he sold pepper too low, he notes that that after he sold Yeshua’s pepper, the price rose and he sold his own pepper at a higher price but “transferred the entire sale to our partnership,” since he “would not like to take the profit for myself.” *Id.* In his reply letter, Yeshua also describes putting out his own money (impliedly with no recompense) to help Khalluf, saying, “I had to pay these 170 dinars from my own resources, in order not to detain what is yours.” *Id.* Eventually these men turned to the legal system to resolve their differences. However, it is notable that Khalluf was so concerned about his reputation with Yeshua, who was a much smaller merchant and who, it seems, did not want to do any further business with him in the future. Yet looking at Yeshua’s connections Khalluf’s fear appears to be well-grounded since Yeshua was in a good position to widely spread negative word about him through the major trading centers.

The final letter is from the son of Ibn Awkal’s long-time agent in Tunisia to a former apprentice and trading partner of his. However, it is not a good example of purely private multilateral reputation sanctioning for breach of a *suhba* relationship. First, it is unclear whether this was a dispute over a *suhba* or the estate of the writer’s father. See GOITEIN, LETTERS, *supra* note 15, at Letter #18; see also Edwards & Ogilvie, *supra* note 1, at 429. Second, the dispute was not purely private. A local merchant was appointed as power of attorney to bring an “action” against the writer, and the person receiving the letter of appointment “showed it to everyone,” after which “the people became agitated and hostile to [me].” Edwards & Ogilvie, *supra* note 1, at 429 (internal quotation marks omitted). In an effort to rehabilitate his reputation, the writer turns to a former partner in Fustat for help salvaging his reputation. He begs his former partner to “mind our friendship and the education given to you by me, and the bread and salt we have eaten together . . . [B]e my proxy everywhere and reply to every detail [of the allegations against me] in this letter.” GOITEIN, LETTERS, *supra* note 15, at Letter #18.

In sum, the letters adduced by Greif as evidence of a traders’ coalition all relate to larger or quite central merchants imposing or being asked to counter reputational harm. And, as Edwards and Ogilvie suggest, none of these letters (nor any of the others in the English language corpus) show that misdeeds were punished by complete exclusion from the trade. In addition, if the Maghribi were a horizontally

Together these considerations suggest that caution must be used in abstracting from the governance of the transactions reflected in the Geniza documents to those that were not—such as transactions between a small merchant in Palermo and a small merchant in Tunisia.

II. SMALL-WORLD NETWORK GOVERNANCE

The fragmentary nature of the historical record does not permit the construction of a complete sociogram mapping of all of the ties among the Maghribi traders and trading centers. It is therefore impossible to conclusively establish that the Maghribi network had small-world structure. But the evidence presented above, together with the fact that the core conditions that theorists associate with the emergence of small-world networks were present across the Maghribis' trading area, suggests that the small-world form is likely to at least closely approximate the overall pattern of ties across the trading area.

Models of network formation suggest that small worlds are most likely to form when (1) the cost of dealing with someone close to you is far lower than the cost of dealing with someone far away and (2) the returns to dealing with transactors in distant places are high enough to induce some transactors do so.¹⁸¹ When these conditions are present—as they were across the Maghribi trading area¹⁸²—the models suggest that “[a] limited number” of

structured group as Greif claims, *see supra* note 40, it is curious that all of the examples he uses to show the coalition's ability to ostracize traders who misbehaved involve these large or central traders.

¹⁸¹ For the formal model of small-world networks that rests on these “fundamental intuitions,” *see* Matthew O. Jackson & Brian W. Rogers, *The Economics of Small Worlds*, 3 J. EUROPEAN ECON. ASS'N 617, 619 (2005) (setting forth a model of network formation where “agents are grouped on ‘islands’, and costs of connection are relatively low within an island and relatively high across islands,” and showing how “[t]his cost structure, together with the indirect benefits structure of the connections model,” which takes into account both the direct benefits of across-island trade as well as the indirect benefits an agent gets from having access to his distant trading partner's connections, can together “generate[] . . . small-world characteristics”). The indirect benefits assumption of the model is met in the Maghribi context because merchants in a *suhba* knew that “[t]he same services [as they might ask one another to provide], albeit to a lesser degree, were expected to be done for friends of business friends.” 1 GOITEIN, SOCIETY, *supra* note 41, at 166. For a discussion of other sets of conditions that might give rise to small-world networks, *see* Joel A. C. Baum et al., *Where Do Small Worlds Come From?*, 12 INDUS. & CORP. CHANGE 697, 697–98 (2003).

¹⁸² As discussed above, text accompanying notes 41–59, trading within a local market was inexpensive given the clique-like structure of ties that enabled information to circulate as the near costless by-product of everyday interactions. There are also many aspects of the trade which suggest that the returns to cross-market trade were high. During this period, overseas connections were valuable. Among other things, they opened up new markets for local commodities, gave traders access to products not available in their local market, and enabled those with contacts in other trading centers to take advantage of the widely different prices prevailing in different markets. *See* GOITEIN, LETTERS, *supra* note 15, at 83 (noting that “[d]espite the dangers and difficulties, goods were sent on to countries where they might obtain a better price”); *see also* SIMONSOHN, *supra* note 15, at Letter #143 (noting the wide differential

people will decide to trade across locations,¹⁸³ creating a classic small-world structure. As noted above, a small-world structure is one where the number of cross-cluster links are small relative to the size of the entire network,¹⁸⁴ yet are structured in such a way that the ties they create dramatically reduce the number of steps that most traders would have had to go through to learn about market conditions and the reputation of merchants in other trading centers. In markets with a small-world structure information can flow (or be obtained) efficiently¹⁸⁵ enough to make reputation a potentially powerful way to support exchange.¹⁸⁶ As one network theorist observed, small-world structures are able to achieve “great efficiency in moving information, innovations, routines, experience, and other resources that enable organizational learning, adaptation and competitive advantage.”¹⁸⁷

Although the contract governance forces generated by the trading area’s small-world network structure might well have been sufficient to bond trade, there were other structural features of the Maghribi market that together with common transactional practices further strengthened the governance power of its small-world form and likely played a role in enhancing the ability of network governance-based private order to adequately bond most of the Maghribis’ commercial undertakings.

in the price of pepper between Sfax and Sicily); *id.* at Letter #148 (where an agent of Ibn Awkal’s in Tunisia notes that he had heard the price of flax was far higher in Sicily).

¹⁸³ Jackson & Rogers, *supra* note 181, at 619. The theorists do not explain why, apart from the cost involved in establishing ties, the number of them is likely to be limited. However, an explanation emerges once it is recognized the merchants who were able to forge overseas connections were network brokers, *see supra* note 152 (defining a network broker and discussing their ability to move sticky information between markets), who were likely to earn higher returns than otherwise similarly situated traders who lacked overseas connections. *See BURT, supra* note 32 (giving multiple examples of the superior returns earned by network brokers). However, there is a limit to how many would-be brokers will choose to make these connections. Although the cost of making these connections remains relatively constant (after perhaps declining a bit initially), after a certain number of connections are established, the benefit to the next additional trader of entering the market will no longer outweigh the cost of doing so. This suggests that small-world networks may be a reasonably stable form of market organization.

¹⁸⁴ *See* Baum et al., *supra* note 181, at 698 (“Despite a low overall density of ties, as a result of the[] clique-spanning ties, actors in a [small-world] network are linked with each other through a relatively small number of intermediaries.”). A defining feature of small-world networks is that they have small diameters. The diameter of a network is “the largest distance between any two nodes in the network.” JACKSON, *supra* note 155, at 32.

¹⁸⁵ *See* Allen Wilhite, *Bilateral Trading and ‘Small-World’ Networks*, 18 COMPUTATIONAL ECON. 49 (2001) (using market simulations based on “an agent-based computational approach” to demonstrate that “a hybrid model in which most agents trade locally but a few agents trade globally results in an economy that quickly reaches a Pareto optimal equilibrium with significantly lower search and negotiation costs” than other networks structures studied).

¹⁸⁶ For example, a trader in Tunisia who wanted to know about a trader in Fustat could have gone to a Taherti, who could have gone to Nahray, who would likely have been able to provide the information.

¹⁸⁷ Baum et al., *supra* note 181, at 697–98.

A. *Two-Tiered Market-Wide Governance*

The small-world configuration of ties among the Maghribi traders and trading centers had a key structural feature that enhanced its governance force: namely, the existence of one or two central information nodes in each trading center. These nodes would have made it possible for most traders to learn about the reputation of a trader in another center by going through only one or two well-known and easily identified intermediaries—thereby making the market as a whole semi-closed,¹⁸⁸ and the force of reputation-based network governance potentially quite strong.

This type of two-tiered market structure, where “[a] small upper-level group of sub-market monitors arranges [or is known to be able to arrange] communication of the news of any cheating in one sub-market to all other sub-markets”¹⁸⁹—something the large traders or Merchants’ Representatives in each of the major trading centers could easily have done—would have enhanced the flow of reputation-related information and with it the network’s governance force. This type of structure also has the advantage of making it possible to determine whether a trader has misbehaved using the “better information available [locally],”¹⁹⁰ something both the Merchants’ Representatives and larger merchants had the ability and incentive to do.

This market structure has been shown (in theory) to be a more efficient governance structure than a clique or a coalition, particularly as the number of traders in a market or the distance between them increases.¹⁹¹ It enables private ordering to work on a scale and over distances that are not possible

¹⁸⁸ The small-world network form is itself semi-closed, yet the existence of the central information nodes in each cluster whose identity was known to all would have increased the closure of the network by increasing the accuracy of information and the speed with which both market and reputation-related information could circulate.

¹⁸⁹ Avinash Dixit, *Two-Tier Market Institutions*, 5 CHI. J. INT’L L. 139, 139 (2004) (introducing and modeling the two-tier market structure).

¹⁹⁰ *Id.* at 143.

¹⁹¹ *Id.* at 140 (“[T]he punishment [of a cheater] is a public good, and its execution is another dilemma game. Theoretical models solve this dilemma by postulating punishments for refusing to participate in punishments of the cheater, ad infinitum, but that is a somewhat unsatisfactory solution.”).

when governance is clique-based¹⁹² and depends on all reputation-relevant information diffusing throughout the clique.¹⁹³

The two-tiered system might also be superior to some types of third-party adjudication systems—even those with the ability to enforce judgments—if the accuracy of the information it uses to determine whether a person has acted improperly is significantly better (and known to be better) than the information used by the third party. This condition may well have obtained in the Maghribi context. The information directly observed by either large merchants or Merchants' Representatives (which determined the imposition or non-imposition of reputational harm in the network) might have been more accurate than the information that could have been submitted to a court in either the Jewish or Muslim legal systems, where witnesses would often have been unavailable, evidence might have been located far away, and extensive delays were common.¹⁹⁴

B. Micro-Network Governance

Network governance among the Maghribi traders may also have been strengthened by three other features of the market that would have enabled local networks and patterns of connections among small subgroups of traders to have greatly contributed to the support of trade. Recent network studies have shown that the configuration of ties among even very small subnetworks of traders can have a potentially powerful effect on contract governance.¹⁹⁵

¹⁹² *Id.* For articles suggesting that there are limits to the size of the group that can be governed by clique governance, see Robert Cooter & Janet T. Landa, *Personal Versus Impersonal Trade: The Size of Trading Groups and Contract Law*, 4 INT'L REV. L. & ECON. 15 (1984) (discussing the connection between group size, informal contract enforcement, and options for formal enforcement), and Avinash Dixit, *Trade Expansion and Contract Enforcement*, 111 J. POL. ECON. 1293, 1294 (2003) ("Self-enforcing 'relation-based' groups face rising marginal costs: members added at the margin are almost by definition less well connected, making it harder to communicate information with them and to ensure their participation in any punishments.").

¹⁹³ See Email from Avinash Dixit, Professor of Econ. Emeritus, Princeton Univ., to author (July 27, 2018) (on file with *Northwestern University Law Review*) (The "costs of detecting and proving misbehavior, and communicating the information about verdicts and punishments (who, what etc) to all traders . . . need not differ between Mr. Big [a local information node] and Greif's coalition; if anything they may be lower for Mr. Big. So Greif's coalition covering the whole market (the full circle in [the] model) can't be any more efficient than one Mr. Big governing the whole. And my model proves that (under the condition of equation (5) which says that the size of the circle C and the density of traders D per unit distance along it are not too small), a single Mr. Big is not as efficient as the two-tier system of several local Mr. Bigs. (Of course if the whole market DC is small, one Mr. Big may suffice.").

¹⁹⁴ See, e.g., Greif, *Early Trade*, *supra* note 1, at 529 (discussing the practical limitations of accessing the legal system, primarily delay and the spoliation of evidence).

¹⁹⁵ See, e.g., John McMillan & Christopher Woodruff, *Dispute Prevention Without Courts in Vietnam*, 15 J.L. ECON. & ORG. 637 (1999); John McMillan & Christopher Woodruff, *Interfirm Relationships and Informal Credit in Vietnam*, 114 Q.J. ECON. 1285 (1999); John McMillan &

The first feature of the market that might have strengthened market-wide network governance is the fact that two-thirds of the *suhbas* between pairs of traders were accompanied by one or more partnerships (that were sometimes, at least in theory, legally enforceable¹⁹⁶) between the traders.¹⁹⁷ Cheating in the *suhba* might have destabilized these partnerships, or led either or both of the partners to incur increased monitoring costs, creating the possibility of monetary losses far in excess of the *suhba* amount.¹⁹⁸ The broad discretion granted to partners under some forms of partnership¹⁹⁹ might also have opened the door to a variety of types of retaliation short of termination, many quite difficult to detect, thereby increasing the cost of any misbehavior and providing a strong deterrent to engaging it.²⁰⁰

Some of the partnerships entered into by merchants with *suhbas* included a third trader as an additional partner.²⁰¹ The governance force

Christopher Woodruff, *Private Order Under Dysfunctional Public Order*, 98 U. MICH. L. REV. 2421 (2000) (documenting the powerful governance effects of small networks in transactions between manufacturers and their buyers and suppliers in Vietnam at a time when the legal system was unable to support exchange); see also Bernstein, *Beyond Relational Contracts*, *supra* note 157, at 608–09 (describing how Harley Davidson uses a supplier council to create network ties among its top cadre of strategic suppliers that enables it to more credibly commit not to misbehave toward any one of them).

¹⁹⁶ The proportion of Maghribi partnerships that were even nominally legally enforceable within either the Jewish or Muslim legal systems is a matter of debate among historians. For an overview of opinions, see ACKERMAN-LIEBERMAN, *supra* note 166.

¹⁹⁷ Goitein, *Crusades*, *supra* note 69, at 59 (“Merchants connected with one another by informal cooperation [*suhba*] normally also concluded, year in year out, formal partnerships in several specific undertakings. Partnerships of different types and facets were the legal instruments for formal cooperation.”). For a more detailed discussion of this practice, see ACKERMAN-LIEBERMAN, *supra* note 166, at 86–90. For examples of such partnerships, see GOITEIN, LETTERS, *supra* note 15, at Letter #16 (revealing that two traders with a *suhba* also had a partnership), and *id.* at Letter #14 (where the author writes to Awkal about their *suhba* as well as a partnership between them, and two additional partnerships each with a different third partner).

¹⁹⁸ As noted above, agents became anxious when they incurred a loss in a *suhba* when acting on behalf of a large merchant with whom they also had a partnership, so much so that they sometimes transferred some personal assets to the partnership to help make up for the loss. See *supra* text accompanying notes 160–164.

¹⁹⁹ See ACKERMAN-LIEBERMAN, *supra* note 166, at 103–21 (discussing discretion in partnerships and noting that “Geniza documents reveal partners to have granted one another varying degrees of discretion”).

²⁰⁰ For a model suggesting that transactors who are linked in more than one market, or by additional contracts, may under certain conditions (most notably different/asymmetric costs of defection in each relationship or contract) have more stable cooperative relations than those who are linked only in one such relationship, see B. Douglas Bernheim & Michael D. Whinston, *Multimarket Contact and Collusive Behavior*, 21 RAND J. ECON. 1 (1990). The intuition is that if breach is overdeterred in one market and underdeterred in another, when the two markets are linked so that breach in one leads to breakdown of the relationship in the other, breach in both markets can sometimes be deterred, making cooperation more likely. *Id.*

²⁰¹ 1 GOITEIN, SOCIETY, *supra* note 41, at 167 (“More often than not, informal cooperation was accompanied by one or more partnerships concluded between the correspondents, frequently with additional partners.”). Udovitch notes these three-way partnerships were often the way that a new

created by the existence of trilateral partnerships would also have been potentially quite powerful. Even if the *suhba* agent thought that any misdeeds would not become widely known, the existence of the trilateral partnership put at risk the potential loss of two trading partners, thereby increasing the cost of any misbehavior.²⁰² Interestingly, one empirical study of the way that the existence of these triangular sets of connections (dubbed “supported relationships”) contributed to performance of reciprocal favor obligations found that triangular ties among market participants contributed more to the support of informal reciprocal obligations than did the overall density of the connections among participants in the relevant market.²⁰³

A second aspect of the market that might have indirectly strengthened network governance is the fact that *suhbas* had to be established face-to-face.²⁰⁴ Given the time, expense, and difficulty of travel during this period, forming new *suhba* relationships would have been very costly. Consequently, even if a trader thought that any information about

merchant was first included in a trusting subnetwork. See Avrom L. Udovitch, *Formalism and Informalism in the Social and Economic Institutions of the Medieval Islamic World*, in INDIVIDUALISM AND CONFORMITY IN CLASSICAL ISLAM 61 (Amin Banani & Speros Vryonis Jr. eds., 1977) [hereinafter Udovitch, *Formalism*].

²⁰² See, e.g., Baum, Shipilov & Rowley, *supra* note 181, at 701 (expressing the widely accepted view that “[t]hird-party ties can also promote good behavior by fostering a concern for local reputation, and reducing each individual member’s power . . . [so that a] member of such a triad is thus less free, less independent, and more constrained than a member of a dyadic relationship, and as a result, triadic ties tend to be more stable and durable than dyadic ties” (citations omitted)). However, while having additional mutual partners in a dense network might encourage better behavior, several recent theoretical studies show that the effect may be at least partly context- and norm-dependent. One study of these triangular sets of connections (dubbed “supported relationships”) suggested that high density would enable punishments to cascade through the network, leading to networks that optimally feature low density but still a high fraction of supported relationships. See Matthew O. Jackson et al., *Social Capital and Social Quilts: Network Patterns of Favor Exchange*, 102 AM. ECON. REV. 1857 (2012) [hereinafter Jackson et al., *Social Quilts*]. Another study shows that with triangular sets of connections, relatively simple punishment behavior can deter cheating, whereas using more complex sets of connections raises problematic incentives for traders who have not deviated to circulate misleading information about who has deviated. See David A. Miller & Xu Tan, *Seeking Relationship Support: Strategic Network Formation and Robust Cooperation* (June 14, 2017) (unpublished manuscript) (on file with *Northwestern University Law Review*); see also Ali & Miller, *supra* note 53 (modeling a similar structure but in a context where the third party would only learn of the breach if the breached-against *suhba* party informed him of it, a context where stability might not be added if the punishment for breach is permanent exclusion, because in such a situation the breached-against party could sometimes do better by not revealing the harm he suffered).

²⁰³ See Jackson et al., *Social Quilts*, *supra* note 202, at 1858–59 (introducing the network structure known as the social quilt and showing how, under certain information transmission assumptions, individuals exchanging favors who “have common friends” are more likely to perform than those who do not; noting that the presence of these third party ties (called “support”) can be a better predictor of performance than the overall density of ties in the relevant market; and providing empirical support based on a study of reciprocal favors in rural Indian villages).

²⁰⁴ Goldberg, *Business Relationships*, *supra* note 1, at 17.

wrongdoing would only spread to those with whom he had prior or current *suhbas* and partnerships, the anticipated damage to his ability to trade might have been significant enough to induce him to behave well (even in his largest undertakings) given the costs and difficulties he would face if he had to create an entirely new personal network after being excluded from his existing network.

Most merchants established their initial core set of trading relationships during their apprenticeship years, while traveling on behalf of their mentors. “[Y]oung merchants traveled to increase their knowledge of people and places, building up their *jāh*”²⁰⁵ along the way. They also learned about the acumen and trustworthiness of many traders by observing how they behaved toward their mentor and others. Conversely, the behavior of younger and apprenticed traders tended to be watched closely by senior merchants, often at the request of their mentor or relatives.²⁰⁶ These aspects of apprenticeship enabled young traders to establish an initial set of ties at a modest cost.²⁰⁷ The cost to a merchant of creating a new personal network mid-career would have been much higher than the cost of building his original network in his youth. A mid-career merchant who was excluded from his prior personal network who set out to establish an equivalent network (even if only with the fifty-odd traders a typical merchant dealt with at one time)²⁰⁸ and thereby reestablish his *jah* would face years of travel and extraordinary expense. Unlike a young new merchant finishing an apprenticeship who had a network of contacts when he began trading on his own account (and thus had at least some *jah*), a merchant attempting to build a new network from scratch would initially have had little or no *jah* to trade. He would therefore have had to undertake particularly time-consuming and labor-intensive activities to induce anyone to trade with him, further increasing the cost of rebuilding his trading network. These considerations suggest that if a trader were to be excluded from his existing (ego) network, the cost to him of establishing a new network and building up his *jah* would have been extraordinarily high.²⁰⁹

²⁰⁵ GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 249.

²⁰⁶ See, e.g., SIMONSOHN, *supra* note 15, at Letter #46 (where Awkal’s nephew asks Awkal to “keep an eye” on his son Joseph).

²⁰⁷ See GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 136 & n.67, 275 (noting that during their apprenticeships “young merchants were encouraged to form associations and partnerships with their peers,” which created “the relationships that would be the foundation of [their] career”; it also gave them the opportunity to “develop [their] ties both with players in the great Mediterranean metropolises and with a particular region”).

²⁰⁸ Goldberg, *Business Relationships*, *supra* note 1, at 11.

²⁰⁹ An important advantage of creating one’s network connections during one’s apprenticeship years while trading on a mentor’s account is that when a young merchant enters the market, he does so with a decent amount of *jah*, that is, a reasonably developed set of connections. If a trader had to build up connections while attempting to operate as an independent and full-fledged merchant rather than an

A trader attempting to create an entirely new network of trading relationships would also have faced two additional hurdles that might have made market reentry difficult or impossible. First, unless the misbehaving merchant was previously known as one of the subset of traders who were widely known to regularly commute between trading centers,²¹⁰ a sudden spurt of travel from a middle-aged and previously sedentary merchant might have been taken as a negative reputation signal, as traders tended to limit their travel as they aged. Second, traders typically required positive references before dealing with a new trader,²¹¹ something that a trader excluded from his own trading network would have been hard-pressed to obtain.

The final consideration that might have strengthened network governance is that in certain types of relationships, the force of bilateral sanctions could have been quite significant. Consider a small trader acting on behalf of one of the largest overseas traders. Even if the only sanction for the small trader's misbehavior was the loss of this one trading relationship, given the *jah* of the largest traders, and the small size of the average transaction, it is unlikely that an agent could make more money by breaching than he would gain from maintaining his access to his largest trading partners' *jah* in the future.²¹² It is therefore plausible that at least the largest traders could have relied on bilateral governance mechanisms to induce many of their agents to behave properly.²¹³

In sum, these micro governance mechanisms combined with the overall force of small-world network governance and strengthened by the two-tier structure of information transfer that characterized the market, might well have been powerful enough to permit the Maghribi traders to transact across the Muslim Mediterranean with little, if any, reliance on the public legal

apprentice, it would likely take a long time, as he would have very little to offer counterparties beyond hard work, which would slow down his ability to form connections.

²¹⁰ Goitein, *Crusades*, *supra* note 69, at 56 (observing that some traders were well-known commuters between various locations).

²¹¹ GOLDBERG, *TRADE AND INSTITUTIONS*, *supra* note 10, at 133 ("Geniza merchants expanded their networks principally through travel" and through formal letters of introduction, but the recommendations in these letters were not taken at face value, additional inquiries were made, and "merchants made their own judgments.").

²¹² Alternatively, a small trader who cheated a large overseas trader might have found himself excluded from the major trading centers given the close ties among the largest merchants in each center. Even if he was able to continue in business, his activities would have been limited to more peripheral, and presumably less profitable, places.

²¹³ Geniza historian Abraham Udovitch thought that *suhba* ties were supported through bilateral governance mechanisms and genuine interpersonal trust that build up over years. See ACKERMAN-LIEBERMAN, *supra* note 166, at 160–61 (presenting Udovitch's views of *suhba* governance).

system and without any coalition of traders with a collectivist identity having existed.

III. REVISITING THE DEBATE OVER PRIVATE VERSUS PUBLIC ORDER

The discussion presented above suggests that private order could have supported trade among the Maghribi traders; yet whether public or private order standing alone was in fact the dominant way of supporting exchange is likely to remain a matter of debate among historians. While the Geniza documents reveal that the Maghribi sometimes went to court,²¹⁴ it is impossible to estimate the rate at which they did so. Yet over the past years, historians, responding in large part to Greif's suggestion that a Maghribi traders' coalition governed exchange, have pointed to a number of considerations that in their view indirectly suggest that private ordering would have been unable to support trade and that the legal system must have played a central role governing exchange.

The historians make three core arguments.²¹⁵ First, they argue that "[t]he trouble which Geniza merchants took to guarantee their activities legally is good evidence that they must have thought the protections of the legal system worth securing,"²¹⁶ for such practices cannot be "fitted into a theory of effective private-order enforcement."²¹⁷ Second, and relatedly, they suggest that multilateral reputation-based private ordering could not have been the primary way of supporting exchange because the types of information that would have had to flow across the region for it to do so—such as discussions of honesty, probity, and malfeasance—were not commonly mentioned in merchant letters, and the information that was communicated did not have the indicia of accuracy needed for reputation-based trade to flourish. And, finally, they point out that because the Maghribi did business with Muslims they must have had ways other than an intra-Maghribi system of private

²¹⁴ See Edwards & Ogilvie, *supra* note 1, at 421 ("The Maghribi traders made use of the formal legal system in order to enforce agency agreements in long-distance trade."); Goldberg, *Business Relationships*, *supra* note 1, at 26 (noting that legal action is mentioned in 5% of the Geniza letters). However, Greif emphasizes that while the legal system may have been used on occasion it is important to note that many references to the legal system in the Geniza corpus do not relate to contract enforcement but rather to issues dealing with the estates of deceased merchants.

²¹⁵ The historians make additional arguments against Greif's claim that a traders' coalition existed, first among them that there is no empirical evidence that it did. For the wide range of arguments they make on this core question and Greif's pointed replies, see sources cited *supra* note 10.

²¹⁶ Goldberg, *Business Relationships*, *supra* note 1, at 29–30.

²¹⁷ *Id.* at 25; see also Bernstein, *Beyond Relational Contracts*, *supra* note 157 (describing the detailed contracts entered into by original equipment manufacturers and their suppliers and exploring how these contracts are used to keep the law out of these relationships and make network governance a more important force).

order to support these and other long-distance trades, such as reliance on the Islamic legal system.

In the absence of new documentary evidence, the relative role of private ordering and public law in the Maghribi trade will never be known. However, in thinking about the implications of the Maghribi case for institutional design and for how public and private order can work in tandem to support trade, it is useful to explore how the core aspects of the Maghribi trade that historians associate with public order might also have enhanced private order.

A. Formalities

Historians maintain that “systematic testimony to the Geniza merchants’ attachment to the legal system” can be found in the extent to which they “organized their activities in accordance with legal norms and forms.”²¹⁸ Traders conducted much of their business in front of witnesses, and also made use of “clerks and notaries” who were “on hand to register transactions, agreements and terms.”²¹⁹ These functionaries also “wrote up contracts” and “noted the state, nature and labelling of shipments that were opened.”²²⁰ And, when traders entered into partnerships, they evidenced a preference for written over unwritten partnership agreements,²²¹ used common legal forms,²²² and were attentive to “secur[ing] the formal quittances that ended each partnership.”²²³ In the historian’s view, these practices cannot be “fitted into a theory of effective private-order enforcement.”²²⁴

These practices might have indicated a desire to rely on the law, or at least preserve the option to do so; yet they are equally consistent with a desire to rely on extralegal contract governance.²²⁵ Each of them could have both

²¹⁸ GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 156.

²¹⁹ Goldberg, *Business Relationships*, *supra* note 1, at 27.

²²⁰ *Id.*

²²¹ *Id.* at 27–28.

²²² Interestingly, while merchants tended to formally use one of the standard forms of partnership when entering into these relationships, “[t]he jargon of merchants in their letters . . . shows that they made different distinctions between partnerships than those found in legal treatises or even in their own written contracts.” Goldberg, *Business Relationships*, *supra* note 1, at 14. This suggests that legal formalities might have been playing a channeling function rather than a strictly governing function in these relationships. See Lon Fuller, *Consideration and Form*, 41 COLUM. L. REV. 799 (1941) (discussing the evidentiary, channeling, and cautionary functions of formality).

²²³ GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 157.

²²⁴ Goldberg, *Business Relationships*, *supra* note 1, at 25; see also Bernstein, *Beyond Relational Contracts*, *supra* note 157 (describing a context where legal practices support informal exchange).

²²⁵ Contemporary systems of private contractual ordering, like the private legal system created and run by the National Grain and Feed Association (NGFA), see Lisa Bernstein, *Merchant Law in a*

improved the stability of bilateral trading relationships²²⁶ and made network governance more powerful. The reason is simple: one of the main roles of a written agreement is to “scaffold” the effectiveness of extralegal governance forces by creating a common understanding between the parties or across the market as a whole about what behavior constitutes cooperation (performance) or noncooperation (breach).²²⁷

In bilateral trading relationships, the common understanding of obligation furthered by use of legal forms makes contracting relationships easier and cheaper to establish. Along with the use of notaries and registries that provide additional documentation of agreements, the use of legally recognized forms also makes these relationships less likely to break down over a misunderstanding about what was agreed to. In addition, the use of

Merchant Court: Rethinking the Code’s Search for Immanent Business Norms, 144 PA. L. REV. 1765, 1771–77 (1996) [hereinafter Bernstein, *Merchant Law*] (providing an overview of the operation of the system), authorize transactors to rely on the services of various types of government or government-authorized functionaries, like licensed weighers and inspectors. *See, e.g.*, NGFA Grain Trade Rules, R. 14, at 10 (Mar. 20, 2018) (“Weights”) (permitting the parties to designate all weights to be Official Class X weights, that is, weights where “weighing is 100 percent supervised by [government] licensed official personnel,” or Class Y weights that are provided by grain elevators whose processes have been certified by the government). The use of these public or publicly licensed functionaries to make these determinations no more transforms this private system into a public one than does the Maghribis’ use of registries or the services of other “government authorities,” and it belies the historians’ claim that the use of such functionaries cannot be “fitted into a theory of effective private-order enforcement.” Goldberg, *Business Relationships*, *supra* note 1, at 25.

²²⁶ Lisa Bernstein, *Private Commercial Law in the Cotton Industry: Creating Cooperation Through Rules, Norms, and Institutions*, 99 MICH. L. REV. 1724, 1751–52 (2001) [hereinafter Bernstein, *Cotton*] (exploring the role of common knowledge in increasing the stability of bilateral cooperative contractual relationships). By clarifying and sometimes standardizing the contours of obligations, formalities of various sorts make it clear to transactors when they are bound and what actions will count as cooperation and what actions will be understood as defection. This clarity reduces the likelihood that bilateral cooperative relationships once established will break down. *Id.* at 1752–53 (“Over time, cotton institutions . . . created formal methods for transmitting reputation information . . . [D]espite the creation of these formal and informal information intermediaries, social trust-based reputation sanctions remained important.”).

²²⁷ Gillian K. Hadfield & Iva Bozovic, *Scaffolding: Using Formal Contracts to Support Informal Relations in Support of Innovation*, 2016 WISC. L. REV. 981, 988 (arguing that “[f]ormal contracting provides essential scaffolding to support the beliefs and strategies that make informal means of enforcement such as reputation and the threat of termination effective,” and noting that in general the role of contractual formalities in ensuring legal enforceability and their role in facilitating extralegal governance are “currently conflated in the relational contracting literature”). For additional empirical support, see generally Bernstein, *Cotton*, *supra* note 226 (describing the rules, norms, and institutions in the American cotton industry that support largely extralegal cooperative contracting relationships); Bernstein, *Merchant Law*, *supra* note 225; and Bernstein, *Beyond Relational Contracts*, *supra* note 157 (discussing the extremely long contracts used by American Rust Belt original equipment manufacturers procuring component parts from suppliers).

witnesses reduces the likelihood of disagreement about what in fact was done.²²⁸

Using widely known legal forms can also enhance the functioning of a system of multilateral reputation-based trade, especially where sanctions are simply the cumulative effect of individual traders deciding that it is not in their own self-interest to deal with a wrongdoer. In these contexts, the success of any multilateral sanctioning system “depends on a common cognitive system that ascribes meaning to various actions, particularly actions that constitute cheating.”²²⁹ If the traders had a sound understanding of the legal forms and transactional requirements of Jewish and/or Islamic law, these forms and requirements would have provided just the type of common understanding (or the focal point for common understanding²³⁰) needed for network governance to have been a powerful force. These benefits, while in some sense arising from the legal system’s existence, were independent of any ability or inclination the traders did or did not have to enforce these obligations in court.

Similarly, while witnesses would have been useful if a trader wanted to sue in either the Jewish or Islamic legal systems, traders had numerous other reasons to have their transactions witnessed. The information witnesses

²²⁸ For a discussion of the lengths large companies go to ensure their suppliers understand their contractual obligations, see Bernstein, *Beyond Relational Contracts*, *supra* note 157.

²²⁹ GREIF, PATH, *supra* note 3, at 69. Greif suggests that for subjects not dealt with explicitly in contracts or merchant letters, much of the common understanding needed for this system of trade was provided by a “merchants’ law.” See GREIF, PATH, *supra* note 3, at 59, 70 (noting that the merchants’ law took the form of a social norm-based “code of conduct” that “specified how agents needed to act to be considered honest in circumstances not mentioned in the merchant’s instructions . . . [It] served as a default contract”). However, Greif does not provide evidence or examples of this merchants’ law, a concept long invoked to explain the success of long-distance trade in Europe during the Middle Ages, that has recently been substantially discredited. See Charles Donahue, Jr., *Medieval and Early Modern Lex Mercatoria: An Attempt at the Probatio Diabolica*, 5 CHI. J. INT’L L. 21, 37 (2004); Emily Kadens, *The Medieval Law Merchant: Tyranny of a Construct*, 7 J. LEGAL ANALYSIS 251 (2015); Emily Kadens, *The Myth of the Customary Law Merchant*, 90 TEX. L. REV. 1153, 1177 (2012). Although Goldberg does not posit the existence of such an extensive law merchant, she notes that in most of the legally recognized forms of partnership and reciprocal agency, “merchant terminology also reveals that each relationship had norms and expectations that went beyond the law.” Goldberg, *Business Relationships*, *supra* note 1, at 22; Phillip I. Ackerman-Lieberman, *Commercial Forms and Legal Norms in the Jewish Community of Medieval Egypt*, 30 L. & HIST. REV. 1007, 1111 (2012) (suggesting that contrary to the claims of Greif and Udovitch there was “complex dialogue between canonized legal norms and commercial practice,” making a blend of Jewish law and Jewish law-influenced merchant practice the source of commonly understood obligations among the Maghribi traders rather than Islamic law or a general law merchant).

²³⁰ Moreover, given this common understanding of what people were obligated to do, transmitting information about what they did in fact do, would, in many instances, have given the recipient the requisite information about a transactor’s probity without any need to mention it explicitly. In addition, such clarity would also have improved bilateral relationships by reducing the likelihood that they would break down over a misunderstanding of what was to be done.

provided in their letters enabled traders to monitor²³¹ their agents and agents to credibly communicate information to their principals.²³² It also made it possible for traders to triangulate information essential to their business operations. Traders also used witnesses to make their representations to their partners and agents more credible. In one letter, a trader who had a problematic relationship with one of his partners sought to convince him that he had acted properly explaining that “I showed people your letter and the merchandise you had with me . . . [and when I turned some of the goods over to X to sell on your behalf] I took out all your goods in the presence of a group of our men, and handed them to [X] to sell them for you.”²³³ Similarly, when relationships between a merchant and an agent got rocky, agents could continue to trade with their principal while reestablishing their trustworthiness by having their activities witnessed by others willing to write to their principals confirming the propriety of their activity. Relationships would, as a result, become less brittle and easier to preserve.²³⁴

There are also several aspects of the Maghribis’ preferences among different forms of contract/partnership, as well as an aspect of their letter-writing conventions, that suggest that they did not view the legal instrument they selected or the law as the primary source of incentives for securing the performance they sought. First, they preferred to use *suhbas* rather than other types of labor contracts, despite the fact that “[b]oth Islamic and Jewish law would only recognize labor contracts with monetary compensation: a portion of the profits, payments by the piece, or a daily wage.”²³⁵ Second, “Geniza merchants seem to have preferred contracts [of particular forms] in opposite proportion to the agent’s natural incentive [based on the contract’s provisions] to provide good service.”²³⁶ Third, while the merchants did show

²³¹ For an example of witnesses playing this monitoring role, see SIMONSOHN, *supra* note 15, at Letter #87 (describing a situation in which a Fustat-based trader having trouble with an agent in North Africa asked one of his partners in the agent’s location to “[u]rge him on and report on him in all your letters.” The same trader also complained that his partner had failed to keep him updated on the actions of another trader who owed him money, saying “I have no doubt that you often receive letters from him, but you fail to write to me and do not mention his affairs. . . . Urge him to send me my due. Put pressure on him”); see also *id.* at Letter #97 (asking Nahray to inform another trader that “throughout the winter I [the author] have been watching over Abū Ibrāhīm . . . in regard to the sale and purchase of cloth and other goods, which he undertook. He is trying hard and is trying to please . . . and always behaves well. He is much better than the others”).

²³² GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 121 (describing an agent who received a letter complaining about his behavior in not selling goods and who responded by bringing witnesses to the warehouse with the principal’s goods to show them that the goods were not salable).

²³³ SIMONSOHN, *supra* note 15, at Letter #91.

²³⁴ See *supra* note 160 (describing how a trader obtained witness statements about a flax transaction and shipped them with the bales since he thought that Ibn Awkal did not fully trust him).

²³⁵ GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 154.

²³⁶ Goldberg, *Business Relationships*, *supra* note 1, at 23.

a preference for written over unwritten partnership agreements, and this preference might have indicated a desire to rely on the legal system for enforcement, it is notable that among the written partnerships in the Geniza corpus, about a third include provisions making the core obligations among partners legally unenforceable.²³⁷ Merchants' preferences for written agreements might also be partially explained by the need to keep track of the partners' respective responsibilities in a market where the typical trader had fifty deals going simultaneously.²³⁸ Finally, the way the Maghribis dated their letters suggests that they might have taken deliberate steps to keep the law and its shadow at bay. Letters were only admissible as evidence in court if they were dated and included the year. Although most letters contained a day and month, they typically omitted the year, which suggests that they were specifically intended not to be evidence in court.²³⁹ Together, these considerations suggest that the shadow of legal enforcement was not likely to have been viewed as the main force creating incentives for performance or nonperformance of commercial obligations.²⁴⁰

²³⁷ See Avner Greif, *Contract Enforcement and Institutions Among the Maghribi Traders: Refuting Edwards and Ogilvie* 10–11 (Ctr. for Econ. Stud., Working Paper No. 2350, 2008), <http://ssrn.com/abstract=1159681> [<https://perma.cc/UJ27-LQKP>] [hereinafter, Greif, *Enforcement*] (“In one third of the (long-distance trade) partnerships, a partner(s) relinquished the right to legally challenge the partner who would serve as an agent. . . . [This] is consistent with the view that reputation-based enforcement prevailed . . .”).

²³⁸ One historian points to a practice that she characterizes as indicating a desire to rely, at least in part, on Muslim courts to enforce contracts, namely that traders often “secured such protection [from the Muslim courts] by drawing up the contract before a Muslim and a Jewish notary.” Goldberg, *Business Relationships*, *supra* note 1, at 28 (citing 1 GOITEIN, SOCIETY, *supra* note 41, at 179, 87–89). Neither of these page cites substantiates the claim, although a search of the index turns up references to Muslim and Jewish notaries both being used to notarize *a certain subset of debt obligations*, not partnerships or other types of commercial agency or exchange. See 1 GOITEIN, SOCIETY, *supra* note 41, at 251–52. Goitein explains the practice (which he notes was infrequently used in the eleventh century but became quite common in the twelfth), as being beneficial as it was needed to make the debt as widely negotiable as possible, something that was critical in an economy where cash was in short supply and credit central to exchange.

²³⁹ See GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 68–69 (“Writers of commercial correspondence generally dated their letters, . . . but never with the year as was required in documents that formed part of the legal record,” they also appeared not to keep them in their files). Goldberg also notes that “[b]oth Islamic and Jewish law would only recognize labor contracts with monetary compensation,” the “very kinds of payments the *suhba* was meant to avoid.” *Id.* at 154. If the Maghribi viewed the legal system as providing important support for their exchanges, their preference for *suhba* over enforceable labor contracts is difficult to explain.

²⁴⁰ Under the most popular transactional form, the *suhba*, the agent had “had no natural incentive to get the best deal on any individual transaction . . . since he would get no commission,” only reciprocal services. And, as for partnership, in the more popular of the two types of partnership (joint-active) the “agent had a natural stake in each deal, for he would get a percentage of the profits” and would have to do less every time he shifted work to the other active partner, whereas it was only in the “least popular” form of relationship, the “sleeping-active partnership,” that “the agent had an uncomplicated and strong incentive to put forth his best efforts.” Goldberg, *Business Relationships*, *supra* note 1, at 23; see also

In sum, recognizing the important role that formalities can play in systems of reputation-based relational contracting²⁴¹ suggests that the many formal and legally defined practices followed by the Maghribi traders that some historians interpret as evidence that the Maghribi relied heavily on the legal system are, in fact, equally consistent with reliance on extralegally governed trade. Indeed, such practices may play an even more important role in systems of private ordering than they do in systems of public order, where more extensive factfinding can take place and understandings tend to be reduced to writing.

Given the practical realities of eleventh-century trade, it is unlikely that that the public legal system standing alone could have adequately supported long-distance trade without either network governance or some other form of private ordering to complement it. For third-party enforcement to be an effective means of enforcing contractual obligations, the obligations themselves must condition on information that is verifiable—that is, information that can be found by a court with sufficient accuracy at a price transactors would consider reasonable from an *ex ante* perspective. Yet the core obligations in the legally unenforceable *suhba* were too amorphous to be verifiable and, even when disputes related to written partnerships, the information that would be relevant to a court in deciding a commercial dispute would likely have been unverifiable,²⁴² making courts a largely (although not entirely) ineffective institution for supporting trade.

B. Insufficient Reputation-Relevant Information Circulating in the Market

Historians have pointed out that if reputation-based sanctions were important to the support of the Maghribi trade, the Geniza letters should be replete with tales of malfeasance²⁴³ and discussions of reputation, integrity,

GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 154. The availability of commission agency “was well known among the Geniza merchants,” yet it was rarely used. Goldberg, *Business Relationships*, *supra* note 1, at 17.

²⁴¹ The historians implicitly acknowledge that formalities can be useful even when obligations are largely or entirely unenforceable when they note that the *suhba* was a “serious undertaking: it was begun and ended formally, often through the taking of oaths—but there was no contract under law.” Goldberg, *Business Relationships*, *supra* note 1, at 19. Formality is, in fact, a hallmark of systems that rely on bilateral or multilateral reputational enforcement mechanisms. Most trade associations that have developed trading rules for use of their members have chosen to adopt very clear bright-line rules and have been careful to ensure that their application depends on facts that are not only observable, but also verifiable. See Bernstein, *Merchant Law*, *supra* note 225; Bernstein, *Cotton*, *supra* note 226.

²⁴² Greif, *Reputations and Coalitions*, *supra* note 1, at 865–66 (“In the eleventh century . . . [t]he court was usually unable to verify agents’ claims and actions or to track down an agent who had emigrated.”).

²⁴³ Malfeasance was defined by a historian as the “failure to carry out the commercial actions that their ‘principals’ asked them to do, putting through deals using the capital entrusted to them by the ‘principal’ but not sharing the profits . . . , failure to stay in communication, [and] to repay debts,” Email

and honesty; yet a content analysis of the letters reveals that “only a handful of documents [letters] reflect allegations about misconduct,”²⁴⁴ and discussions of probity were rare.²⁴⁵ The absence of these types of comments, however, does not undermine the idea that the information infrastructure of the Maghribi was robust enough to support multilateral reputation-based trade.²⁴⁶

I. Malfeasance

Even though the letters did not include extensive discussions of honesty or dishonesty, they routinely included the types of market information that would have permitted traders to infer malfeasance if and when it occurred. They included detailed information about market prices, the cargo and sailing and arrival times of ships, and the local political situation that would have made it possible for recipients to detect price-related misbehavior by their agents and assess the validity of the most common types of excuses proffered. “[I]nstructions and reports on . . . business dealings account for nearly half of the exposition of all letters”²⁴⁷ Of the space devoted to discussing business behavior, 41% focused on the actions of the writer, 13% on the actions of the recipient, and 46% on the behavior of third parties.²⁴⁸ Common topics (and the percent of the text in the letters devoted to them) included transactions (48.5%), behavior of associates (18.0%), other information (11.9%), travels (5.2%) and legal actions (1.4%).²⁴⁹ Merchants typically had more than one agent in each market. This enabled them to triangulate much of the information they received.²⁵⁰ This information should have, and seems to have, permitted traders to make inferences about their

from Sheilagh Ogilvie, Prof. of Econ. History, Univ. of Cambridge, to author (Dec. 16, 2016) (on file with *Northwestern University Law Review*), and by another as behavior ranging from “shirking work to misreporting trades to embezzling goods,” as well as taking advantage of information asymmetries, Goldberg, *Business Relationships*, *supra* note 1, at 23.

²⁴⁴ Greif, *Reputations and Coalitions*, *supra* note 1, at 864.

²⁴⁵ GOLDBERG, *TRADE AND INSTITUTIONS*, *supra* note 10, at 149.

²⁴⁶ Greif views the absence of frequent discussions of malfeasance and the infrequency of exclusionary punishment as consistent with the traders’ coalition hypothesis since in the coalition model malfeasance and with it “[p]unishment is off-the-equilibrium path,” and therefore discussions of it “are not likely to appear in the historical documents.” See Greif, *Enforcement*, *supra* note 237.

²⁴⁷ GOLDBERG, *TRADE AND INSTITUTIONS*, *supra* note 10, at 77.

²⁴⁸ *Id.* at 79 fig.3.6.

²⁴⁹ *Id.* at 78 fig.3.5.

²⁵⁰ See Stillman, *Merchant House*, *supra* note 28, at 41–42 (providing an example of Awkal getting conflicting information from his agents about the price of pepper and lacquer in an overseas location). Traders often asked one another for information on prices in particular markets. See, e.g., SIMONSOHN, *supra* note 15, at Letter #69 (where a Taherti asks Nahray for such information); Letter #65 (where an agent provides Nahray with some information he requested).

partners' and agents' actions that would have enabled them to detect misbehavior even from afar.

For example, suppose that an agent in Palermo sold a bale of flax on behalf of a Fustat merchant at one price, but reported receiving a much lower price in a letter. How, if at all, would one expect this type of malfeasance to be detected and in what form would one expect information about it to be disseminated across the relevant market?

In the ordinary course of things, the Fustat merchant would get a letter from his agent reporting the sale price and perhaps arranging to remit payment. The Fustat merchant would also receive letters from his other agents in Palermo reporting on market prices.²⁵¹ He might also acquire such information by talking to fellow Fustat merchants who either traveled to or did business in Palermo. If the Fustat merchant concluded from the comparison that his agent cheated—and decided to make that known to the relevant market participants—he would have two options. First he could talk about it within the Fustat market, which was very close-knit. This would spread information harmful to the agent's reputation and make those in Fustat less likely to deal with him in the future. Second, he could send letters to those in the agent's home market or other markets alerting them to the agent's misbehavior.²⁵² Whichever route he chose, it would be unlikely to be reflected in the Geniza documents, since very few of the letters *from* Fustat found their way into the Geniza.²⁵³

In sum, although the Maghribi letters sent *to* Fustat might not have discussed malfeasance very often, they routinely included information that would have enabled their recipients to *infer* malfeasance. Information about malfeasance could then have been spread orally or in letters, making a reputation-based sanctioning system an effective way to support trade.

²⁵¹ Greif, *Reputations and Coalitions*, *supra* note 1, at 877 (noting that the Maghribi used a per transaction accounting system to make it easier for "merchants to compare their agents' reports with any relevant information they have obtained from other sources").

²⁵² However, given that very few letters that were sent from Fustat were preserved, whether or not this took place cannot be established.

²⁵³ Similarly, if an agent in Palermo remitted the wrong percentage of profit to a partner in Fustat, only someone with knowledge of both the profit arrangement in the partnership agreement and the amount actually remitted would know whether the remittance was proper. Thus, a merchant in Fustat might get information about the relevant market prices or the amount actually received by his agent from another agent or friend in Palermo, but there would not likely be anyone in Palermo who would know that the actions of the agent were malfeasance. So, in thinking about the extent to which the network could transmit the type of information needed to make network governance effective, the focus should be on whether the breached-against party had a way to get the information he needed to determine whether there had been breach or performance, and how (letter or word of mouth) and to whom he might have transmitted this information once he had it. As discussed *supra* text accompanying notes 176–180, given the directionality of the letters in the Geniza, it is impossible to determine how often this was done.

2. Infrequent Mentions of “Ird”

The historians who are skeptical that “reputation mechanism[s] were . . . [used to] signal[] and monitor[] honesty” suggest that if these mechanisms were operational, “merchants [would be expected] to refer incessantly to their integrity and honour,”²⁵⁴ a type of reputation known as “*ird*.” *Ird* was an aggregate assessment of a transactor’s reputation for probity.²⁵⁵ Yet the letters contain little explicit discussion of *ird* and a mere “tiny trickle of talk about honesty,”²⁵⁶ most of which was indirect.²⁵⁷

But the infrequent mentions of *ird* do not necessarily suggest that reputation was unimportant. First, anything a writer said about his own *ird* would likely have been dismissed as self-interested puffery. Second, comments about someone else’s *ird* would likely have been seen as less accurate (due to echo effects²⁵⁸) and hence less valuable than recounting things that a person did or failed to do.²⁵⁹ Third, the letters contained a great deal of information about reputation in the *jah* sense of the word. In a world of network governance, information about who would, on a go-forward basis, be more constrained by fear of prospective reputation harm as a consequence of their network position (*jah*), might be viewed as more valuable than discussions of *ird*. The letters routinely included information that could be understood as merchants signaling the strength of their local *jah*. Merchants would typically ask the recipients of their letters to pass on their greetings to other traders in their recipient-agent’s locale. By naming their local connections, merchants were letting their agents know that they

²⁵⁴ Goldberg, *Business Relationships*, *supra* note 1, at 32.

²⁵⁵ See *id.* at 32 (noting that *ird* was referred to in less than “half a per cent of the letters”). But see 5 GOITEIN, SOCIETY, *supra* note 41, at 203 (“Honor in the sense of a reputation acquired through integrity, reliability, and honesty was the most precious capital of a merchant Consequently, complaints about honor impugned are rather common in the Geniza business correspondence.”).

²⁵⁶ Goldberg, *Business Relationships*, *supra* note 1, at 32.

²⁵⁷ Historians also point out that *ird* is rarely mentioned even in letters where one merchant is recommending another to a prospective business partner. *Id.* at 33–34. Yet such omissions are entirely understandable. A merchant would not recommend a dishonest associate (that is, one with a bad *ird*) so one would not expect much discussion of *ird* in the letters. In contrast, associates would likely have varied widely in their *jah* so discussing this would have been highly relevant.

²⁵⁸ Information about a trader’s *ird* might also have been viewed as less valuable because these types of highly subjective aggregate judgments are very vulnerable to distortion from the echo effects that, under certain conditions, tend to move aggregate judgments about reputation to the poles of extreme trust or distrust. As network theorists have explained, “[i]nformation obtained in casual conversations . . . creates an erroneous sense of certainty. Interpersonal evaluations are amplified to positive and negative extremes. Favorable opinion is amplified into trust. Doubt is amplified into distrust.” BURT, *supra* note 32, at 168.

²⁵⁹ Similar preferences are revealed in modern procurement markets, where managers prefer to share information about specific things their contracting partners did or did not do, e.g., “he met only 80% of KPIs or his ppm error rate was 200,000,” rather than their impressions of their trustworthiness. See Interview With Supply Chain Manager and Engineer at Caterpillar, (Nov. 21, 2017).

had a lot of *jah* in the agent's location, and, by implication, that the agent's actions would be closely monitored, and, perhaps, reported back to them.²⁶⁰ Conversely, in reporting back to their principals, agents often sent regards from people their principal knew in the agent's area, a subtle way of communicating the identity of those who could confirm important particulars of the actions the agent had taken on their behalf. Agents would also send regards to traders in the principal's location to signal that the principal should also take the agent's *jah* into account when their roles were reversed.

3. Accuracy

Historians have argued that because the Maghribi traders did not have "any neutral mechanism for assessing accusations of opportunism,"²⁶¹ the information that traveled through the Maghribi networks would not have been accurate enough for a multilateral reputation mechanism to work.²⁶²

²⁶⁰ For an example of a smaller merchant asking one of their prominent overseas *suhba* partners to monitor one of their other agents, see SIMONSOHN, *supra* note 15, at Letter #102 (asking Nahray to "[p]lease keep an eye on Qāsim and see to it that the flax is of good quality").

²⁶¹ Edwards & Ogilvie, *supra* note 1, at 428.

²⁶² *Id.* at 428. More specifically, these historians argue that because other successful systems of private contractual ordering, such as those found in the diamond industry, *see* Bernstein, *Diamonds*, *supra* note 20, and the cotton trade, *see* Bernstein, *Cotton*, *supra* note 226, at 124–30, have "arbitration boards and tribunals that evaluate accusations of opportunism before demanding sanctions from industry members not directly involved in a dispute," Edwards & Ogilvie, *supra* note 1, at 428, such tribunals are needed for reputation-based multilateral sanctions to effectively support trade. However, this argument is based on a faulty factual understanding of when these tribunals invoke multilateral reputation sanctions and fundamentally misunderstands the role that arbitration plays in supporting trade in these industries.

First, these tribunals only publicize wrongdoing when the wrongdoer fails to comply with an arbitration award. In the diamond industry, both the existence and outcomes of arbitrations are kept secret as long as the wrongdoer complies with the tribunal's judgment. In the cotton industry, one tribunal follows the same practice, Bernstein, *Cotton*, *supra* note 226, at 1728–34 (describing the arbitral rules of the Memphis Cotton Exchange), while another produces written decisions describing the dispute and the outcome, but does not include the names of the parties, *id.* (describing the arbitral procedures at the Board of Appeals, the arbitration tribunal that decides disputes between merchants and mills).

Second, these tribunals decide only a small number of disputes per year relative to the number of transactions in the relevant markets. The dominant way they effect trade is not through "accurately" determining right and wrong, but by providing a back-stop or complement to, not a replacement for, network governance. Their main effect on the work-a-day circulation of reputation information is to make it more costly for a trader to make a false accusation of wrongdoing. Should he do so, the accused can point out that he was either (1) not taken to arbitration; or (2) if he was, he promptly complied with any judgment against him, because if he had not complied he would have been expelled from the Trade Associations or commodities exchanges that operated the tribunals. In both of these industries, work-a-day commercial order is maintained predominately through interpersonal network governance. As a cotton dealer explained, the main cotton trading street in Memphis "is worse than a bunch of old women": it is "like a sewing circle" and "most breaches of a serious nature are known within a day." Bernstein, *Cotton*, *supra* note 226, at 1752 (internal quotation marks omitted). Similarly, as a diamond industry observer noted, "the bourse grapevine is the best in the world. It has been going for years and moves with the efficiency of a satellite communications network [I]nformation . . . is passed out along . . .

Although outside of suits in the Jewish or Muslim courts there were no dispute resolution tribunals that could render binding and enforceable decisions, the Maghribi did have access to mediation. “In their own locality merchants were expected . . . to help adjudicate disputes, negotiate settlements, maintain the rules of the market, and uphold the reputation and functioning of their city’s market.”²⁶³ Merchants’ Representatives were also expected to act as “neutral arbiter[s]” when disputes arose.²⁶⁴ More formal commercial mediation—staffed by two local merchants and a scribe—was available under the auspices of the Jewish court system. Although these tribunals also rendered purely advisory opinions, disputants tended to comply with them. Given the status of the merchants who served on these panels, failure to act in accordance with their recommendations would have likely been very damaging to a disputant’s reputation.

Moreover, several features of the Maghribi trade contributed to the accuracy of the information circulating through the network. First, Merchants’ Representatives observed a great deal of commercial behavior directly and could aggregate it largely free of echo effects. They also had had a direct financial incentive to ensure that accurate reputation information circulated, and could easily have been consulted by merchants to check the gossip of the marketplace.²⁶⁵ Second, the use of witnesses (and the naming of witnesses one’s counterparty knew in agent letters), notaries, and contract registries—together with the propensity to conduct business in public—likely contributed to the accuracy of circulating information and discouraged the transmission of inaccurate information for fear of detection. And, third, because it was widely known that merchants “operated through several agents at the same time and even at the same trade center,”²⁶⁶ agents would have been loath to transmit false information in a letter knowing there was a high probability that any misrepresentations would be detected.

Finally, it is important to note that studies of reputation-based network governance in other contexts have shown²⁶⁷ that it can be an effective form of contract governance, even in the absence of “any neutral mechanism for assessing accusations of opportunism,”²⁶⁸ and even when the information

tentacles that stretch around the world.” Bernstein, *Diamonds*, *supra* note 20, at 121 (internal quotation marks omitted).

²⁶³ GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 140.

²⁶⁴ I GOITEIN, SOCIETY, *supra* note 41, at 187.

²⁶⁵ See *supra* text accompanying notes 148–151.

²⁶⁶ Greif, *Early Trade*, *supra* note 1, at 528.

²⁶⁷ See, e.g., Robinson & Stuart, *supra* note 155; Macmillian & Woodruff, *supra* note 195, at 1285 (documenting the effect of even very small networks on contract governance in Vietnam at a time when neither courts nor private dispute resolution systems provided formal support for trade).

²⁶⁸ Edwards & Ogilvie, *supra* note 1, at 428.

transmitted though the network is somewhat subjective and is based on predicate facts that are observable to the person transmitting the information but are either partially or entirely unobservable and unverifiable by the recipient of the information.²⁶⁹

C. *Exchange with Muslim Traders*

Historians have noted that while the Maghribi traders preferred to deal with one another, they also traded with non-Maghribis (both Muslims and Jews) and routinely engaged non-Maghribi shippers and other helpers to perform various functions, “such as carrying money, accompanying goods, and carrying letters.”²⁷⁰ These historians maintain that relationships “between Maghribi and Muslim traders” were able to function “precisely because contracts could be enforced using legal institutions.”²⁷¹ They further suggest that given the Maghribis’ use of the legal system in these relationships, it stands to reason that the Maghribi “used legal mechanisms

²⁶⁹ See, e.g., Robinson & Stuart, *supra* note 155, at 247, 270 (exploring a context in which the network was found to have exerted a considerable governance force even though much of the information the firms might have shared about the reasons for the success or failure of various alliances would have been based on information that was observable to the transactors but neither observable nor verifiable to the person with whom they were sharing the information). Moreover, even if the reputation-related information circulating through a network is not entirely accurate, as long as it is considered reliable enough to prompt further investigation before entering into a transaction with a particular trader, it can have a strong effect on contract governance. See Bernstein, *Beyond Relational Contracts*, *supra* note 157, at 603 n.137 (“Network members do not need to completely trust network-circulated information for it to affect their actions. Sometimes information that is not viewed as entirely trustworthy might put the recipient firm on notice that further inquiry is needed before dealing with the firm in question. This in turn will raise the cost of dealing with the gossiped-about firm and make it a less attractive contracting partner at the early screening stage.”). The letters reveal that the Maghribi were wary of automatically accepting rumors as fact; merchants often attempted to verify and/or disprove rumors they heard and information they received. See Udovitch, *Formalism*, *supra* note 201, at 61, 76 (discussing a transaction in which a merchant entered into a *suhba* with an agent recommended by another business associate, but asked him numerous questions to test his knowledge and made him swear an oath—a serious request at that time—that all he said was true before agreeing to deal with him). It was not uncommon for merchants to solicit witnesses to prove that they took certain actions or dealt appropriately with changing market conditions, *supra* note 160, or for merchants to try to rehabilitate either their own reputations or the reputations of traders whose reputations they felt had been unfairly tarnished. These efforts likely reduced the likelihood that false rumors would lead to long-term reputational harm.

²⁷⁰ GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 149 (“Geniza merchants [also] trusted . . . Muslim merchants and occasionally ship-captains or sailors[] not to cheat them in tasks such as carrying money, accompanying goods, and carrying letters—the very activities in which absconding might seem easiest.”); see also Stillman, Dissertation, *supra* note 15, at 75 (discussing Ibn Awkal’s dealings with Muslim agents and shippers). Interestingly, there were certain shippers who often dealt with the Maghribi traders and their names appear often in the letters. One notable example is Ibn Daisur. See SIMONSOHN, *supra* note 15, at Letters #35, #43, #48, #49, #53 & #95. Another example is Iskander. See *id.* at Letters #43, #64, #66, #69, #119, #140, #143, #154, #159, #106, #109 & #87.

²⁷¹ Edwards & Ogilvie, *supra* note 1, at 442.

to enforce agency agreements” and that “[t]heir long-distance trade was not conducted solely using private-order enforcement mechanisms.”²⁷²

This reasoning, however, overlooks the ways that the existence of a semi-closed network among the Maghribi traders could have supported at least some types of agreements between Maghribi merchants and Muslim market participants. Consider a Muslim who provided shipping or agency services to a Fustat-based Maghribi trader. As long as the Muslim viewed the prospect of future business with Maghribi traders to be valuable, his behavior could have been effectively, if imperfectly, governed by the force of network governance.²⁷³ Given the role that Maghribi traders played in the commercial life of Fustat, any non-Maghribi dealing with Maghribi in or connected to Fustat would have been aware that if they cheated, absconded, or underperformed in any way and this were detected by a Maghribi, it would likely become widely known, thereby jeopardizing the non-Maghribis’ ability to do business with Maghribi merchants²⁷⁴ or other traders in Fustat.²⁷⁵ Maintaining a good reputation in Fustat would have been important to Muslim traders because “a vast amount of evidence points to the economic centrality of Cairo–Fustat in this period.”²⁷⁶ In addition, given the overseas connections of Fustat traders, information learned in Fustat could easily be transmitted throughout the Maghribi network—particularly to Sicily and Tunisia.

More generally, the ability of a sufficiently closed network to discipline the activities of traders *outside the network* is, in certain conditions, a powerful force, and a major, yet underappreciated, aspect of network

²⁷² *Id.* Greif views his model as consistent with some trade between Maghribi and non-Maghribi. See Greif, *Enforcement*, *supra* note 237, at 25 n.38 (A “multilateral reputation mechanism does not . . . require ‘that Maghribis formed business associations for long-distance trade *only* with other Maghribis.’ It requires only that the value of group membership is sufficiently high in equilibrium given the number of non-group agents.” (internal cross-references omitted)).

²⁷³ Sureties were sometimes used for additional security. See GOITEIN, *LETTERS*, *supra* note 15, at Letter #11 (asking the recipient to send my goods “[s]hould a caravan set out in which trustworthy Muslims, who have given you sureties, will travel . . .”).

²⁷⁴ This conclusion assumes the non-Maghribi could be adequately identified to other traders. This appears to be true at least as regards non-Maghribi shippers, who are mentioned by name in the letters to identify which ship is carrying particular goods. As no description is given beyond their name, it seems that their identities were widely known. See SIMONSOHN, *supra* note 15, at Letters #97, #98, & #100 (referring to shippers by name, seemingly assuming that the letter’s recipient knew whom they were talking about).

²⁷⁵ Similarly, if a non-Maghribi shipper cheated a Maghribi located in one of the overseas trading centers, this would likely have become known within the center. The power of this information could persist over time, even as new traders came and went from the center, if it were retained as local knowledge by the stationary Merchants’ Representative.

²⁷⁶ GOLDBERG, *TRADE AND INSTITUTIONS*, *supra* note 10, at 201; see also Stillman, *Merchant House*, *supra* note 28, at 15 (noting that in the eleventh century, “Fustat-Cairo [was] the nerve center of economic and commercial activity”).

governance. It arises from the observation that the degree of closure among *recipients* of reputation-related information—rather than the degree of closure among those generating the initial information—determines the strength of the network’s constraint on behavior.²⁷⁷

Yet what exactly constrained the actions of the Fustat merchants in their dealings with Muslim traders and service providers is a more complex question that cannot be fully answered on the basis of available evidence.²⁷⁸ As regards transportation providers, it is important to note that Jews “were excluded from certain economic sectors, such as transportation,”²⁷⁹ and only Muslims ran the caravans that transported goods overland on the Sabbath.²⁸⁰ Given that Muslim shippers provided services the Maghribi could not provide for themselves, a shipper’s threat to terminate services if a trader behaved badly might well have been sufficient to induce traders to behave well, particularly if information about trader behavior was circulated among either shippers generally or shippers servicing particular locations.

Thus, under certain conditions, private order might well have supported trade between Maghribi and Muslim merchants, and the existence of these apparently successful trading and service relationships does not weaken the

²⁷⁷ See BURT, *supra* note 32, at 93–166 (discussing the concept of closure). The ways that closed networks and groups can constrain the actions of market participants outside of the group/network is well illustrated by the New York diamond market in the 1980s. See Bernstein, *Diamonds*, *supra* note 20, at 152 (analyzing the operation of the diamond industry’s private legal system and its use of nonlegal sanctions that relied on information transmitted by both social networks and more formal institutions to support trade). Under the rules of the World Federation of Diamond Bourses, the industry-wide umbrella organization, any trader who failed to promptly comply with a judgment rendered against him by a bourse’s arbitration system would be expelled from all member bourses, and a picture of him, along with a statement that the trader both failed to meet his obligations and refused to comply with an arbitration award rendered against him, would be posted at the entrance of all member bourses. Members who were found trading with expelled members were not themselves expelled from trading centers; yet they typically found it more difficult to do business with other bourse members. Because bourse membership increases the value of a trader’s business, most traders who are not members of a bourse hope to become members in the future. Bernstein, *Diamonds*, *supra* note 20, at 152. Potential future members know that to qualify for membership they would be required to have operated a diamond business for two years, have a member-sponsor who will guarantee their debts for a period of years, and have their name vetted in front of the membership as a whole. *Id.* at 19 nn.5–6. As a consequence, a trader who has not yet been admitted to a bourse has a very strong incentive to keep his commitments when dealing with a bourse member. Moreover, even if the trader did not want to be admitted to the bourse, this effect would still arise so long as he wished to deal with bourse members in the future.

²⁷⁸ One possible constraint is that the shippers “served both as transporters and customers,” so a desire to retain their customer base might have played a role. Goitein, *Crusades*, *supra* note 69, at 58.

²⁷⁹ GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 357.

²⁸⁰ The Sabbath-observant Maghribi sometimes used non-Jewish shippers because they could not travel themselves in “the great caravans that were a key part of North African economic connectivity,” which operated on the Sabbath, so they “certainly consigned shipments to these caravans, . . . under the care of non-Jews.” GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 54.

claim that private order was most likely the dominant way of supporting exchange.²⁸¹

In closing, although it is unclear what role, if any, the legal system played in contract enforcement, there are two important ways that the public system may have meaningfully contributed to the support and operation of the Maghribi trade.²⁸² First, the public legal system provided a passably well developed set of property rights.²⁸³ Although the extent to which they could be effectively enforced is unclear, they likely played some role in supporting trade. Second, the Muslim and Jewish legal systems provided standard-form definitions of widely used transactional forms (different types of agency and partnership) whose contours were widely understood. These understandings were far more likely than any hypothesized law merchant²⁸⁴ to have provided the focal points for extralegal understandings that enabled private order to flourish.²⁸⁵

CONCLUSION

This Article has explored the contract governance properties of the small-world network form and used it to provide an account of how long-distance trade among the Maghribi traders might have been supported largely, if not entirely, independent of the public legal system. Yet it has also sought to suggest that the theory of small-world network governance discussed here has implications that go far beyond understanding this particular group of traders.²⁸⁶

The small-world market structure has been documented in a wide variety of transactional contexts—ranging from inter-firm alliances²⁸⁷ to movie actors²⁸⁸—perhaps because the conditions that give rise to it are so

²⁸¹ Contractual relations between Maghribi traders and Muslim market participants, however, certainly could have been differentially governed by the shadow of the Islamic legal system. Given the strictures of Jewish religious law, Jews would have been less wary of going to gentile courts in disputes with gentiles than going to gentile or Jewish courts to resolve disputes with other Jews.

²⁸² See generally ACKERMAN-LIEBERMAN, *supra* note 166.

²⁸³ Goldberg, *Business Relationships*, *supra* note 1, at 26.

²⁸⁴ See GREIF, PATH, *supra* note 3, at 70–71 (suggesting that the Maghribi followed the norms of the law merchant in their work-a-day commercial interactions). *But see* ACKERMAN-LIEBERMAN, *supra* note 166.

²⁸⁵ See Donahue, *supra* note 229; Kadens, *supra* note 229.

²⁸⁶ A search of Westlaw and Lexis turned up only seventeen mentions of the small-world network form, none of them dealing with exchange.

²⁸⁷ See, e.g., Bart Verspagen & Geert Duysters, *The Small Worlds of Strategic Technology Alliances*, 24 *TECHNOVATION* 563, 563 (2004) (finding that “networks of strategic technology alliances can indeed be characterized as small worlds . . . [in the] chemicals and food, and electricals” industries).

²⁸⁸ See Brian Uzzi, Luis AN Amaral & Felix Reed-Tsochas, *Small-World Networks and Management Science Research: A Review*, 4 *EUROPEAN MGMT. REV.* 77, 79 (2007) (providing an overview of studies

common and because, as demonstrated here, it has potentially powerful contract governance advantages, particularly when augmented by central information nodes, which in more modern contexts can be trade associations, credit rating agencies, clubs, or any of a number of kinds of verification intermediaries.²⁸⁹ It has also been shown to have a beneficial impact on both a firm's and an industry's ability to innovate, an increasingly important determinant of strategic advantage in the modern economy.

The ubiquity of small-world networks in commerce and their ability to bond trade outside the shadow of the law suggests that in thinking about the force of reputation-based sanctions or assessing the likelihood that private ordering will be able to effectively support or enhance exchange in any particular context, the analysis must move beyond the conditions the legal literature associates with private ordering—namely, close-knit, geographically concentrated, densely connected cliques. The focus needs to shift to exploring the broader (and narrower) patterns of ties among participants in both particular markets and particular industries as a whole that can support exchange.²⁹⁰ While the conditions emphasized in the legal literature remain relevant for thinking about the costs of various ties²⁹¹ and the likelihood that particular patterns of ties will emerge, moving away from

from a variety of contexts where the small-world network form characterizes the relationships between market participants).

²⁸⁹ Small-world networks have also been associated with innovation in particular markets. See Melissa A. Schilling & Corey C. Phelps, *Interfirm Collaboration Networks: The Impact of Large-Scale Network Structure on Firm Innovation*, 53 MGMT. SCI. 1113, 1113 (2007) (hypothesizing that “firms embedded in alliance networks that exhibit both high clustering and high reach (short average path lengths to a wide range of firms) will have greater innovative output than firms in networks that do not exhibit these characteristics,” and finding “support for this proposition in a longitudinal study of the patent performance of 1,106 firms in 11 industry-level alliance networks”). It may be that once the transaction cost advantages, strategic innovation advantages, and informal contract enforcement advantages of small-world networks are taken into account, the small-world network form may turn out to be highly advantageous for many types of business.

²⁹⁰ The question of whether private ordering among the Maghribi traders should be considered a study of a religiously homogeneous group is not as straightforward as it might appear at first. The Maghribi were fully integrated into their local Jewish community for all purposes other than trade. They forwent potentially profitable trading opportunities in countries with many Jewish, but no Maghribi traders. Moreover, the traders group included members of the mainstream Jewish communities that followed the teachings of the Jerusalem Yeshivas, as well as members of the Karaite sect, which had separate synagogues and a very different set of religious practices. See GOITEIN, LETTERS, *supra* note 15, at Letter #11 (letter from the Tahertis' followers of the Jerusalem Yeshivas to the Tustaris, who were Karaites). Moreover, as historian Goldberg notes, “shared Jewishness was neither a necessary nor a sufficient condition for forming business relationships. There was no all-inclusive Jewish merchant network in this period.” GOLDBERG, TRADE AND INSTITUTIONS, *supra* note 10, at 355.

²⁹¹ This is not to say that ethnic ties are not special; they are. For an extensive treatment of the role of ethnicity in trade, see JANET TAI LANDA, ECONOMIC SUCCESS OF CHINESE MERCHANTS IN SOUTHEAST ASIA: IDENTITY, ETHNIC COOPERATION AND CONFLICT: INTEGRATING THE SOCIAL SCIENCES WITH EVOLUTIONARY BIOLOGY (2016).

these traditional factors should help identify additional circumstances where private ordering can be effective and/or reputational sanctions are likely to meaningfully change transactors' behavior, even in contexts where a public legal system functions well.

Interestingly, some case studies in the legal literature that are associated with network governance in geographically concentrated, close-knit small groups (that is, dense cliques), turn out to be examples of small-world networks if one either zooms in and looks at the exchange patterns within the group or zooms out and looks at the pattern of trade across the market as a whole. For example, the ties among the members of the New York Diamond Dealers Club appear to be and are a densely connected clique. Yet traders report that there are subgroups of traders with whom they deal more frequently. These subgroups, which partially overlap with one another, are typically defined by friendship, attendance at the same synagogue, and/or similar understandings of good and bad commercial behavior.

Conversely, if one zooms out, one sees that the Club is one of twenty bourses the world over that are members of the World Federation of Diamond Bourses. The World Federation is a conduit for information and inter-bourse rule enforcement. Its bylaws provide that any trader who is expelled from a member bourse for failure to comply with an arbitration award will have his name and picture sent to all member bourses and will be immediately banned from entering any of them. The bourses are also linked by prominent (and less prominent) international diamond traders who travel among them and both spread information and trade using their reciprocal membership privileges.²⁹²

²⁹² See Dixit, *supra* note 189, at 143–44 (noting that Bernstein's description of the diamond industry institutions is an example of a two-tier contract governance mechanism). In the early 1900s the cotton and grain industries were also organized as bridge and cluster networks. Both had regional associations and/or exchanges that were linked together by a national organization that transmitted information about those who were expelled from the local association to all other local associations. And, when lumbermen decided that they needed to form social relationships to improve their business relationships, which were quite contentious, they formed the secret fraternal society of lumbermen, the Concatenated Order of Hoo-Hoo. The Hoo-Hoo was composed of local clubs (clusters) who were united under the umbrella of Hoo-Hoo International. Each year regional clubs and then clubs across the country met at giant social events called Concatenations. These events provided the opportunity to form friendships not only among the traders but also among their families. The theory behind the Hoo-Hoo was that "lumbermen meeting on the grounds of good fellowship could receive intangible benefits that might eventually trickle down into all aspects of business." Billy Tarpley, *1892-1992: A Century of Fraternalism: The History of the International Concatenated Order of Hoo-Hoo*, LOG & TALLY, May 1992, at 9. Hoo-Hoo who were found to have engaged in "unlawful or disreputable business" practices were expelled, and could no longer put the black cat, the symbol of membership, on their businesses' correspondence and advertising. See *By Laws of the International Concatenated Order of Hoo-Hoo, Incorporated*, art. 2, § 8(a) (2018), <https://www.hoo-hoo.org/siteFiles/4/HHI%20By-Laws%20updated%20Oct.%2003%202018.pdf> [<https://perma.cc/FT8C-VLGY>].

More broadly, the analysis presented here suggests that paying attention to network structure as a governance force may also contribute to the design of reforms to better support trade. It suggests that the focus of reform efforts in developing countries need not be on the creation of fully developed public legal systems—something that may be difficult to accomplish in certain settings. Rather, in many contexts, paying close attention to the pattern of ties among transactors can pinpoint places where trade will benefit from the creation of physical trading centers, information intermediaries like credit rating agencies or information bureaus, or even simply social groups of various kinds—ranging from bowling leagues, to secret fraternal societies, to eating clubs. All of these institutions can meaningfully contribute to the success of exchange, so long as they create channels for the flow of reputation-relevant information. Conversely, attention to network structure can help policymakers avoid reforms that might have unintended negative effects by disturbing the ties underlying the social basis of trade.²⁹³

In sum, exploring network structures other than dense cliques that can support exchange, together with recent work on micronetwork structure which shows how certain patterns of ties in particular transactors' immediate vicinity can support trade as or more effectively than the overall patterns of ties in the market,²⁹⁴ suggests that network analysis has a great deal to contribute to the understanding of private order and may, one day, make it possible to devise ways to support an ever more complex array of obligations without meaningful reliance on the public legal system.²⁹⁵ By identifying the small-world network as one of these alternative governance structures, this Article lends additional support to the overarching conclusion of Greif's seminal work, namely "that private-order institutions . . . can support sophisticated exchange . . . [and that those designing] market-promoting policies should take [this] into account particularly in countries lacking an effective court system."²⁹⁶

²⁹³ Addressing the way this alternative account of contract governance among the Maghribi traders fits into Greif's theories of economic development more broadly is beyond the scope of this Article. However, it is important to note that just as coalitions (especially, though not exclusively, those based on a fixed identity, such as Jews who emigrated from Baghdad and their decedents) face some limits on how much they can expand, and may at some point become unable to adequately support trade, small-world networks, too, may cease to be able to support trade if one or more of their most important (in this case upper-tier) nodes is disrupted by exogenous events like failure to pass a business to a son or sudden death of a group of family members.

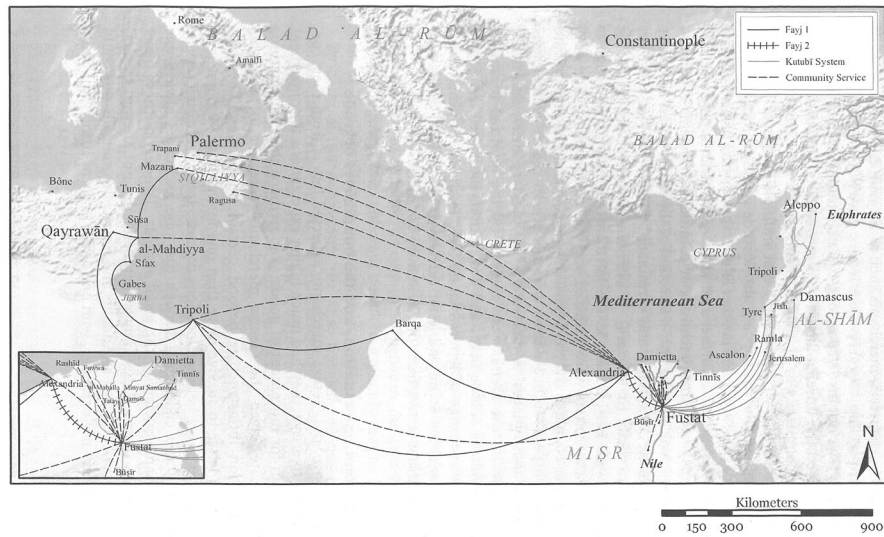
²⁹⁴ See, e.g., Jackson et al., *Social Quilts*, *supra* note 202.

²⁹⁵ For example, some firms have created networks to effectively tie their hands and create credible commitments not to behave in particular ways, commitments that they could not have made through contract. For examples, see Bernstein, *Beyond Relational Contracts*, *supra* note 157.

²⁹⁶ Greif, *A Reappraisal?*, *supra* note 10, at 2.

APPENDIX

APPENDIX A: TRADING ROUTES BETWEEN EGYPT, SICILY, AND TUNISIA



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